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OFFICIAL ORGAN OF THE NORTHWEST FRUIT GROWERS ASSOCIATION

VOLUME FOUR

NUMBER NINE

DOLLAR A YEAR

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# BETTER FRUIT

*March 1910*

COLORADO NATIONAL APPLE SHOW EDITION

HELD AT DENVER JANUARY, 1910

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*Engraving by Clason Map Co., Denver, Colorado*

A BRANCH OF FINE COLORADO APPLES

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PUBLISHED BY

BETTER FRUIT PUBLISHING COMPANY  
HOOD RIVER, OREGON

Own an Irrigated Fruit Orchard

*in the famous*

# Bitter Root Valley

And Provide an Annuity for Old Age

We will plant and take care of the land during the growing period, turning over to you a bearing orchard, which will thereafter yield a competence for life. Easy terms.

Send for Literature

## Bitter Root Valley Irrigation Co.

100 Washington Street, Chicago Hamilton, Montana

D. M. THOMPSON, President  
E. G. TAYLOR, Vice President

C. F. YOUNG, Secretary  
PHIL. T. BECHER, Treasurer

## Spokane Valley Irrigated Land Co.

INCORPORATED

GREENACRES OTIS ORCHARDS OPPORTUNITY EAST FARMS WEST FARMS  
EAST GREENACRES PASADENA

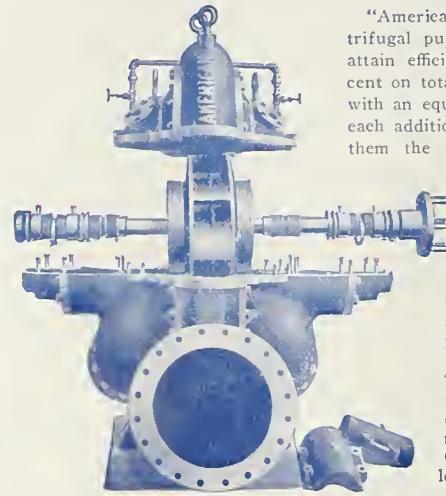
The Spokane Valley Land and Water Company is a very strong corporation, of which Mr. D. C. Corbin is the president and the active head. Mr. Corbin is many times a millionaire, the president of the Spokane International Railroad, and is very closely connected with the officials of the Canadian Pacific. He has done more to develop this Western country than any two men in the Northwest. With Mr. Corbin are associated Mr. J. K. O. Sherwood and Mr. Alfred C. Chapin. Both of these gentlemen are millionaires and stand very high in financial circles in New York. Their standing can be ascertained without any difficulty. These gentlemen have been very instrumental in developing the Spokane Valley, in the way of building canals and purchasing land, apart from the Spokane & International Railroad, which was built by the same parties two years ago, running from Spokane to Eastport and tapping the Canadian Pacific on the boundary line.

The Spokane Canal Company, which is a Spokane corporation headed by Mr. J. Greer Long of the Washington Trust Company and Mr. L. MacLean of this city, has quite large holdings in the Spokane Valley. These gentlemen are rated A No. 1 in any of our commercial agencies.

Mr. D. K. McDonald and Mr. A. C. Jamieson, both capitalists of this city, are the owners of Opportunity. They have been very success-

All the Grand Prizes and All the Gold Medals  
Given by the Alaska-Yukon-Pacific Exposition at Seattle  
last summer to pumps were awarded to

## “AMERICAN” PUMPING MACHINERY



“American” single stage centrifugal pumps are guaranteed to attain efficiencies of 60 to 80 per cent on total heads up to 125 feet, with an equal increase in head for each additional stage, which makes them the most economical pump made for irrigation purposes.

“American” centrifugals are made in both horizontal and vertical styles, in any size, in any number of stages, and are equipped with any power.

Write for “Efficiency Tests of American Centrifugals,” by the most eminent hydraulic engineer on the Pacific Coast. Complete catalogue, No. 104, free.

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305 COLUMBIA BUILDING, SPOKANE

Write us for full particulars and illustrated booklet showing the high class of improvements now under way in the Spokane Valley

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SPOKANE, WASHINGTON

## MAGINNIS GALVANIZED STEEL FLUME



No. 84 Maginnis Steel Flume, 9,000 feet long, erected by the Canyon Canal Company, Emmett, Idaho

ANY LENGTH  
ANY SIZE

A FLUME THAT NEVER LEAKS

T. C. EGLESTON, Sales Manager

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NO RIVETS  
NO SOLDER

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LEONARD BAIRD

Office:  
Rooms 4 and 5  
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Permission  
The First National Bank  
The Delta National Bank

Uncompahgre lands watered by the Gunnison tunnel (backed by Uncle Sam)  
 Surface Creek and Gunnison Valley lands (the home of the Jonathan apple)  
 Co-operative water systems. Gravity flow. No pumping

DELTA COUNTY SHIPPED MORE FRUIT IN 1909 THAN ANY OTHER COUNTY  
IN THE UNITED STATES

Send for our booklet, "DELTA, THE GARDEN SPOT OF THE STATE"—FREE

WIRE-BAIRD REALTY CO.  
DELTA, COLORADO

# Steinhardt & Kelly

101 Park Place, New York

*The largest and most extensive fruit concern in the world  
operating in all the fruit growing sections of the civilized globe*

## Exclusive Purveyors of High Class Fruits

STEINHARDT & KELLY HANDLE MORE

## BOX APPLES

THAN ANY OTHER CONCERN IN THE COUNTRY

and was the first fruit house to extensively introduce the Northwestern product to the consumers of the East. With able representation in all the leading markets STEINHARDT & KELLY are enabled to handle the entire crops of the most extensive districts with utmost ease and celerity

CORRESPONDENCE WITH ASSOCIATIONS, UNIONS AND INDIVIDUAL GROWERS WILL BE GIVEN PERSONAL ATTENTION

# A Revolution in Spraying!

APTERITE, THE NEW SOIL FUMIGANT

HIGHLY  
CONCENTRATED  
RELIABLE  
AND  
EFFECTIVE  
CLEANSE AND  
INVIGORATE



NO SEDIMENT  
NO CLOGGING  
MIX INSTANTLY  
WITH  
COLD WATER

## *Read Hood River's Testimony*

Hood River, Oregon, November 9, 1909.

*Mr. C. G. Roberts:*  
In response to your request for results in using Cooper's Sprays last season, I have to inform you that it was a success, and am so well satisfied that I propose to use nothing else during the coming season, and confidently recommend its use to my neighbors in Hood River and fruit growers generally. The V1 or winter spray is most convenient and clean handling, and cleaned up my trees from loose bark and insects or eggs which may have harbored therein. The summer spray, V3, destroyed codling moth, the brown aphis, and, so far as I know, the spores of fungus, as my apples ripened almost free of imperfection, ready for packing, as I did not require to wipe them, as usual by other sprays.

L. D. Boyed.

Hood River, Oregon, November 18, 1909.

This is to certify that I used Cooper's V1 Spray for fungus, according to directions, on six acres of Newtowns last March, of which last year was about 20 per cent fungus, this year not more than one per cent. The spray is easy to prepare and very agreeable to apply, and I consider it the most economical spray I ever used. I use the finest nozzle, with a high pressure, and choose a quiet day for spraying to get the best results.

O. M. DeWitt.

Hood River, Oregon, November 17, 1909.

In regard to the Cooper Spray, in answer to your inquiries as to what success I have had with it, will say that I have been somewhat worried about fungus on my apples for several years until last year, when I used V1 for winter spray, and am well pleased with results, as my apples were almost entirely clean of fungus this season. Shall try it again the coming season.

J. R. Crosby.

Hood River, Oregon, November 17, 1909.

I used the Cooper Spray V1 for fungus and can say that I am well pleased with its results. On a crop of about 300 boxes of apples I had only about one box that was affected with fungus. As for convenience, I can recommend it ahead of any other spray I ever used. My trees were affected but very little with aphis after using the V1.

J. H. Eggert.

Hood River, Oregon, November 20, 1909.

*Mr. C. G. Roberts:*  
I have used the Cooper Winter Spray and it put my trees in fine and healthy shape. I consider it a very economical spray and pleasant to handle, not hurting the hands nor having the disagreeable effect on the hands and face of the sprayer of the lime and sulphur sprays.

E. C. Mahaney.

Hood River, Oregon, November 17, 1909.

*Mr. C. G. Roberts:*  
Dear Sir—In answer to your inquiry about results from the use of Cooper's Spray, will say that my apple orchard had become badly infested with fungus. I made one application of V1 spray early in March, while the trees were yet dormant, with results that my apple crop is practically free from that disease. It also cleansed the trees of moss and other objectionable growths. I am so well pleased with results that I shall use it again next year.

Yours very truly,

M. D. Odell.

Hood River, Oregon, November 20, 1909.

*Mr. C. G. Roberts:*  
I have used three gallons of winter spray, the Cooper V1, on my orchard and the orchards near mine that I am caring for. I find it the best spray I ever used, as it cleaned my trees of scale and fungus and put the trees in the most healthy condition. This spray is pleasant to handle, having none of the objectionable qualities of lime and sulphur spray, and I consider it the most economical I ever used. I recommend it to my neighbors and fruit growers generally.

L. A. E. Clark, Pippin Hill Fruit Farm.

Hood River, Oregon, November 20, 1909.

*C. G. Roberts, General Agents Cooper's Spray:*  
Dear Sir—I used V2 fluid, or summer spray, this spring, for green aphis, and got very satisfactory results; in fact, as good as any other kind I ever used.

Yours truly,

A. D. Moe.

Hood River, Oregon, November 13, 1909.

I will say that I have tried the Cooper Summer Spray and it cleaned my trees from the green aphis as good as any spray I have had experience with.

E. N. Benson.

Hood River, Oregon, November 20, 1909.

This is to certify that I have used the Cooper Spray, V2, on my orchard and it cleared it of green aphis and fungus and put the trees in healthy condition.

Louise J. Schiller.

I hereby certify that I used the Cooper Spray once in the spring and the trees showed marked improvement.

Charles Davis.

Hood River, Oregon, November 27, 1909.

This is to certify that I have used Cooper's Tree Spray Fluids, V1, for killing San Jose scale and found it very effectual.

G. R. Castner, County Fruit Inspector.

Write for 32-page booklet (third edition) just published

Containing much interesting matter, also testimonials from many other fruit growers

**C. G. ROBERTS**

247 Ash Street      Portland, Oregon

**LOCAL OREGON AGENTS**

D. McDonald, Hood River	H. Dyer & Co., Myrtle Creek
Maier & Shannon, The Dalles	M. Brown & Co., Salem
F. H. Churchill, Roseburg	Glen Fabrick, Medford

Sole Manufacturers:

**WILLIAM COOPER AND NEPHEWS, 64 West Illinois Street, Chicago, Illinois**

**Richey & Gilbert Co.**  
H. M. GILBERT, President and Manager  
Growers and Shippers of  
**YAKIMA VALLEY**  
**FRUITS AND PRODUCE**  
Specialties: Apples, Peaches  
Pears and Cantaloupes  
TOPPENISH, WASHINGTON

Correspondence Solicited  
**RYAN & VIRDEN CO.**  
BUTTE, MONTANA  
Branch Houses: Livingstone, Billings, Sheridan, Montana; Lewiston, Idaho.  
**Wholesale Fruit and Produce**  
WE HAVE MODERN COLD STORAGE FACILITIES  
ESSENTIAL FOR HANDLING YOUR PRODUCTS  
A strong house that gives reliable market  
reports and prompt cash returns

The Old Reliable  
**BELL & CO.**  
Incorporated  
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**PRODUCE**  
112-114 Front Street  
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**BROKERAGE CO.**  
Consignments solicited with quick returns  
**FRUITS, PRODUCE**  
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Between Front and First Streets

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**APPLES**  
Spitzenbergs, Newtowns, Jonathans, Arkansas Blacks, Ortleys, Winesaps, R. C. Pippins, Baldwins, M. B. Twigs, Ben Davis  
Look Good, Taste Better, Sell Best  
Grade and Pack Guaranteed  
**Apple Growers' Union**  
Hood River, Oregon

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**WHOLESALE FRUITS**  
and  
**COMMISSION**  
Apples, Peaches and Strawberries  
127 South Water Street  
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WHOLESALE  
**FRUITS & PRODUCE**  
**Commission Merchants**  
SOLICIT YOUR CONSIGNMENTS  
Top Prices and Prompt Returns  
PORTLAND, OREGON

**FAMOUS HOOD RIVER**  
**Strawberries**  
THE FINEST  
BERRY ON EARTH AND  
THE BEST SHIPPER  
Look Good, but Taste Better  
Fancy Pack Guaranteed  
**FRUIT GROWERS' UNION**  
Hood River, Oregon

**Mark Levy & Co.**  
COMMISSION  
MERCHANTS  
**WHOLESALE FRUITS**  
121-123 FRONT AND  
200 WASHINGTON ST.  
PORTLAND, OREGON

**O. W. BUTTS**  
Wholesale Fruits  
and Commission  
STRAWBERRIES AND APPLES  
*Our Specialty*  
A Strong House, Pioneer Dealer  
of Thirty Years' Experience  
OMAHA, NEBRASKA

IF YOU WANT TO  
MARKET YOUR  
**FRUIT**  
RIGHT  
ALWAYS SHIP TO

W. H. Dryer      W. W. Bollam  
**Dryer, Bollam & Co.**  
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NEW YORK  
APPLES, PEARS, PRUNES  
**QUALITY**  
**QUALITY**  
**QUALITY**

WHOLESALE FRUITS  
AND PRODUCE  
108-110 Front Street  
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# MCEWEN & KOSKEY

Wholesale Fruit and Produce and  
General Commission Merchants

129 Front Street, Portland, Oregon

## CONSIGNMENTS

Are solicited, all your shipments  
receiving our personal attention

# Ryan & Newton Company

## Wholesale Fruits & Produce

Spokane, Washington

We have modern cold storage facilities essential for the handling of your products

*Reliable Market Reports*

PROMPT CASH RETURNS

# Stranahan & Clark

DEALERS IN

Commercial Fertilizers  
Land Plaster, Lime  
Plaster Paris, Cement  
Building Plasters  
HOOD RIVER, OREGON

# Davenport Bros.

Portland, Oregon

## WHOLESALE FRUIT & PRODUCE

*Growers and Shippers of the Famous*  
**Mosier Valley Fruits**

# LINDSAY & CO. LTD.

## Wholesale Fruits

HELENA, MONTANA

*Established in Helena Quarter of a Century*

Branch houses: Great Falls, Mis-  
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# Pearson-Page Co.

131-133 Front Street  
PORTLAND, OREGON

Superior facilities for handling

## PEACHES APPLES AND PEARS

Solicit Your Consignments

*Reliable Market Reports Prompt Cash Returns*

# Stanley-Smith Lumber Co.

WHOLESALE AND RETAIL

## LUMBER

Lath, Shingles, Wood, Etc.

Hood River, Oregon

# FRUIT BOXES

Western  
Soft Pine.  
Light, strong  
and durable.

"Better Fruit"  
subscribers  
demand the  
"Better Box."

*CAN MAKE TWO CARLOADS DAILY*

## WASHINGTON MILL CO.

*Wholesale Manufacturers*  
Spokane, Washington

# European Receivers of American Fruits

SIMONS, JACOBS & CO.  
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SIMONS, SHUTTLEWORTH & CO.  
LIVERPOOL and MANCHESTER

GARCIA, JACOBS & CO.  
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HAMBURG

OMER DECUGIS ET FILS  
PARIS

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Simons, Shuttleworth & French Co.  
204 Franklin Street, New York

Walter Webling  
46 Clinton Street, Boston

John Brown  
Brighton, Ontario

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Montreal, Quebec

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OUR SPECIALTIES ARE APPLES AND PEARS

IRA J. NELSON, President

MALCOLM CLAY, Vice President

CLARENCE NELSON, Secretary

# The Nelson Bros. Fruit Co.

The oldest established fruit shipping firm in Delta County

Our car of Apples a prize winner at the Colorado National Apple Show, Denver

PACKERS AND SHIPPERS OF THE

## FAMOUS BRAND

OF APPLES AND ALBERTA PEACHES

OUTPUT FOR SEASON 1909, 300 CARS

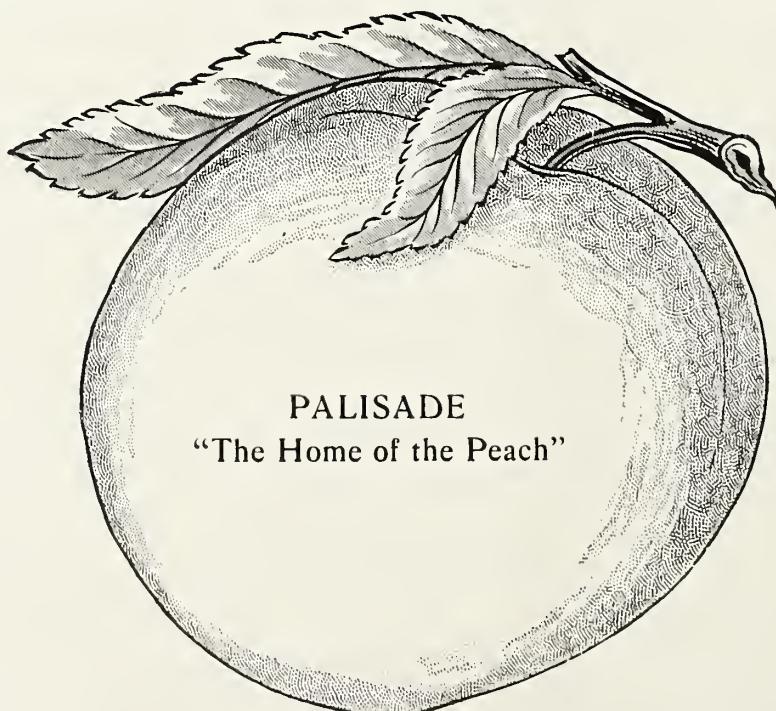
Shipping from Paonia, Hotchkiss and all stations on the North Fork branch of the  
Denver & Rio Grande Railway

CORRESPONDENCE SOLICITED

PAONIA, COLORADO

## The Palisade Fruit Growers' Association

SHIPPERS  
OF  
FINE  
FRUITS



150 Cars  
ELBERTAS  
Season 1909  
"The Palisade Kind"

PALISADE, COLORADO

# THE GRAND JUNCTION FRUIT GROWERS' ASSOCIATION

GRAND JUNCTION, COLORADO

*The Largest Carlot Shippers in Colorado*

## SHIPPING STATIONS

GRAND JUNCTION, PALISADE and CLIFTON

Have agents in all the principal fruit markets  
of the United States

*We sell either f.o.b. or delivered*

*We guarantee our pack*

### SHIPPING

### STORAGE

### COMMISSION

## The Delta County Fruit Growers' Association

### GENERAL COMMISSION AND STORAGE BUSINESS

### OLDEST, LARGEST AND STRONGEST INSTITUTION IN DELTA COUNTY

Shippers and Handlers of Fine Fruits and Honey

Specialties: Potatoes and Apples in car lots

Reference: Delta National Bank, Delta, Colorado

Geo. S. Conklin, Manager

Jobbers of Salt, Flour, Oranges and Lemons

We carry a full line of Honey and Fruit Growers' Supplies

Revised Economy Code; Modern Economy Code

DELTA, COLORADO

W. H. GARVIN, Sales Manager  
Delta, Colorado

F. C. LUELLEN, Manager  
Austin, Colorado

## THE SURFACE CREEK FRUIT GROWERS' ASSOCIATION

AUSTIN, COLORADO

Packers and Shippers of Fancy Colorado Fruits  
OUTPUT FOR SEASON 1909  
250 Cars of Peaches, Pears and Apples

WELDON HAMMOND, President and Managing Director  
 C. H. STICKLE, Vice President  
 CHARLES T. RULE, Secretary

A. L. ROBERTS, Treasurer  
 CHARLES OLIVER, Director  
 A. L. CRAIG, Manager

# The North Fork Fruit Growers' Association

Growers, Packers and Marketing Agents  
 Dealers in Growers' Supplies and Merchandise  
 Operating in the principal shipping districts of the North Fork Valley

Our trade-mark, "Columbine" (the flower of Colorado), is  
 familiar to discriminating buyers of apples

## Shippers of Elberta Peaches of unsurpassed quality

GENERAL OFFICE, PAONIA, COLORADO

Packing Houses and Loading Stations at Paonia, Roberts, Coburn, Bowie  
 and Elberta, Colorado

## COLORADO IRRIGATED FRUIT LANDS

*The Antlers-Silt District of the Famous Grand River Valley*

### The Antlers Orchard Development Company

Mining Exchange Building, Colorado Springs, Colorado

Owns and offers 4,000 acres of the best fruit land in the state. Perfect water rights

CROP FAILURES UNKNOWN

NO SMUDGING

We will plant and maintain your orchard for you at cost.  
 You need not be an experienced orchardist or live on the land.  
 Write for booklet and references.

## SNAPS

IN DELTA COUNTY, COLORADO, where the prize-winning fruit was grown this year. Buy a fruit ranch NOW, while the prices are low, and grow into wealth with the growth of your orchard. Buy NOW, before the new railroad gets in.

40 acres valley land 2 miles out; 15 acres alfalfa, 10 acres grain land, 2 acres bearing apple orchard, 1,100 boxes last season; all kinds small fruit; fair buildings; good water right. Price.....\$4,000  
 20 acres valley land 2 miles out; double water right, 2-room log house, frame house, cellar, cistern, stable, poultry house; 1 acre 8-year-old apple orchard, 4 acres young apples, 1 acre bearing peaches, 25 bearing trees, mixed, all kinds;  $\frac{3}{4}$  acre berries, mixed; team, wagon, cow; all implements for ranch; owner takes trunk only; splendid location, R. F. D., telephone; no waste. A snap at.....\$4,500  
 80 acres valley land  $2\frac{1}{2}$  miles out; R. F. D., telephone; 18 acres fruit, 1,000 boxes apples last season; 3 acres hay; good 3-room frame house, stable, outbuildings, etc.; good water right. A bargain at.....\$6,000

40 acres mesa land  $2\frac{3}{4}$  miles out; frame house, stables; 2 acres bearing orchard, mixed; 32 acres alfalfa; good water right. Priced low.....\$3,800  
 40 acres 2 miles out, valley land; R. F. D., telephone; 1,000 Jonathan apples 5 years old, 700 Elberta peaches, 75 mixed bearing trees, 25 sweet cherries, 25 apricots, 1,000 dewberries, 1,000 strawberries, 500 grapes; 4 acres alfalfa; 4-room frame house, outbuildings, etc.; close to school. A ranch that will be worth \$10,000 when fully developed; good water right and a splendid location. A bargain at.....\$8,000  
 10-acre relinquishment close in.....\$400  
 120-acre relinquishment; 10 acres cultivated; 2-room house; ditch and partial water right. Only.....\$1,200

WRITE FOR FURTHER INFORMATION AND SPECIAL TRANSPORTATION

CEDAREDGE REALTY CO.

E. D. Smith, Manager

CEDAREDGE, COLORADO

# Invest Your Savings in Fruit Lands

Colorado is one of the greatest apple producing states in the Union. To own a good orchard in that profit producing section is to own a little gold mine in which the pay streak will never pinch out.

Information will be cheerfully sent to any person desiring it by

## The Oro Investment Co.

CLINTON L. OLIVER, Secretary Colorado National Apple Exposition, Secretary-Treasurer  
CHAS. T. RULE, Sales Manager  
PAONIA, COLORADO

## DELTA COUNTY, COLORADO

Delta County, Colorado, shipped more apples and peaches than any other county in the United States in 1909. The North Fork Valley shipped more than half of that. No device saved this crop; it saved itself.

Irrigated lands for sale in this famous valley at very low prices, lands that grow the finest Jonathan, Rome Beauty and Winesap apples and Elberta peaches that are grown on the face of the globe. If you are interested in fruit growing under the most favorable natural conditions in the world, write today for beautifully illustrated booklet and map of the county and complete price list of lands.

## F. D. WILLOUGHBY

THE HOTCHKISS REAL ESTATE AND WATER RIGHT MAN  
HOTCHKISS, DELTA COUNTY, COLORADO

## QUANTITY QUALITY

### DELTA COUNTY, COLORADO

In 1909 shipped more peaches and apples than any other county in the United States

Out of 347 prizes awarded at the National Apple Show in Denver, Delta won 101—more than any other county. Twenty-two first prizes, including first for best display at National Horticultural

Congress, and similar victories at all big expositions.

Thousands of acres of fine land to receive water from the Gunnison tunnel, opened last year, and large areas for fruit raising for sale at low prices in all parts of the county.

### THIS SOUNDS BIG—IT IS BIG

All we ask is that you make a thorough investigation. When you have done that Delta will have a new resident. Let us tell you more about it.

## DELTA COUNTY BUSINESS MEN'S ASSOCIATION DELTA, COLORADO

## For Better Fruit Buy Better Land

JUST OVER THE MOUNTAINS FROM OREGON IN A BEAUTIFUL CALIFORNIA VALLEY  
YOU CAN PICK FRUIT EVERY MONTH IN THE YEAR

You can cut alfalfa six times and net \$60 per acre. Two crops of potatoes and other vegetables give double the results obtained elsewhere. Our irrigated lands are selling fast at \$150 per acre, with water right, on easy terms. No damaging frosts; cheap river and rail transportation; adjoining the Stanford University vineyard. The chance of a lifetime.

*WRITE US FOR FREE BOOKLET*

**Los Molinos Land Company** Cone Street, Los Molinos, Tehama County, California

# D. CROSSELY & SONS

Established 1878

## APPLES FOR EXPORT

California, Oregon, Washington, Idaho and Florida fruits. Apples handled in all European markets. Checks mailed from our New York office same day apples are sold on the other side. We are not agents we **sell apples**. We make a specialty of handling cherries, apricots, peaches and all early fruits on the New York market. Correspondence solicited.

200 TO 204 FRANKLIN STREET, NEW YORK  
 LIVERPOOL      NEW YORK      BOSTON      GLASGOW

## Arcadia Orchards Company—Irrigated Orchards

*The Land of Sunshine*

*The Center of the Best Fruit Belt in Washington*

Only twenty-two miles from Spokane. Excellent transportation facilities, ideal climate, irrigation by gravity

**Our Plan:** We plant, cultivate, irrigate and care for your orchard for four years, and pay your taxes for five years. You may remain at your present occupation while we bring your orchard to bearing. No charge for water. The largest private irrigation project in the West. Buy now, before a further increase in values. Easy terms. Send for literature.

ARCADIA ORCHARDS COMPANY

Hyde Building, SPOKANE, WASHINGTON

## WALLA WALLA WASHINGTON

Is the center of the **oldest orchard district** of the Northwest

OUR ALTITUDE IS RIGHT  
 OUR LOCATION IS RIGHT  
 OUR CLIMATE IS RIGHT  
 OUR SOIL IS RIGHT

In fact, the Walla Walla Valley has been making good as a place to farm and a *place to live* for the past fifty years—yes, we emphasize that latter point, because it is of more importance than is sometimes understood. THE WALLA WALLA VALLEY IS A GOOD PLACE TO LIVE, for here agriculture goes hand in hand with a long-established "civilization." The chief city of the valley, in addition to offering every ordinary convenience and benefit, is the home of the famous Whitman College, now accumulating an endowment of \$2,000,000, and ready today, with the scores of other schools throughout the valley, to welcome your children to opportunities equal to those of the East.

THE WALLA WALLA COMMERCIAL CLUB  
 Will cheerfully answer all the questions you may ask regarding this

SOUTHEAST CORNER  
 OF THE  
 NORTHWEST STATE

## CALDWELL APPLE BELT Canyon County, Idaho

*THE HOME OF THE PERFECT JONATHAN*

We are the owners of the prize-winning apple orchard of the United States, having won seven individual prizes out of a possible eight at the National Horticultural Congress at Council Bluffs, Iowa, December, 1908, against nineteen competing states.

We are land dealers and own our offerings. Fruit lands and suburban tracts our specialties. Liberal terms.

Address  
**H. W. DORMAN**  
 Manager Dorman Land Company      Caldwell, Idaho

## WALNUTS

GRAFTED FRANQUETTE TREES

**I**F YOU WANT the best of anything, go to one who specializes on that thing. We are offering the best that can be produced in the walnut line. Grafts selected only from our heaviest bearing trees of Vrooman strain and grafted on the best selected California and Royal hybrid roots grown. Also, on the same rapid-growing roots, Mayette, Parisienne, Meylan, Bijou, San Jose Mayette, etc., or any local variety of which you have grafts, if ordered a year in advance. Write for catalogue and price list.

**IMPERIAL WALNUT NURSERY**  
 R. F. D. No. 7      San Jose, California

# Gibson Fruit Company

*Not Incorporated*

131 SOUTH WATER STREET

CHICAGO, ILLINOIS

## Great Central Market

We specialize in fancy Pacific Coast and Northwestern fruit. We are general distributing and Eastern marketing agents for some of the largest associations and shippers in the Northwest. We make a specialty of selling f. o. b. in transit or delivered, whichever way will realize best results for the shipper.

If you have not already arranged for the disposition of your shipments, make us your general Eastern sales agents. Will give your business special attention.

Mr. W. C. Michael, our Northwestern representative, is well known to a large number of the shippers of that section, and will be glad to call and see you during the season.

We own our own cold storage plant, the only one on South Water Street. It is an up-to-date one with a capacity for one hundred thousand boxes of apples. This, in connection with our store, places us in the best position of any one in the fruit business to protect the interests of the shippers.

We refer you to The First National Bank, Chicago, The Chicago Packer, and the Produce Reporter Company

## SPRINGVILLE

Is to Utah

What Palisade is to Colorado

## The Natural Fruit Center

*Buy cheap lands now*

ROE A. DEAL Springville

## John Leland Henderson

*Incorporated*  
COUNTY SURVEYOR  
HOOD RIVER, OREGON  
POSSESSES

CLIMATE—A desirable medium between the drier eastern and the more moist western conditions of the Northwest.

SOIL—Volcanic ash, rich in phosphates, and recognized as the best in the world for apples and strawberries.

Makes a specialty of real estate, conveyancing, loans and surveying. The president, John Leland Henderson, is a practicing lawyer residing in Hood River, and has been identified with the Hood River Valley for thirty-three years

## Willamette Valley Fruit Lands

*In Tracts to Suit*

Rich soil. Delightful climate  
For descriptive literature write

OLMSTED LAND CO. Salem, Oregon

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CONSULTING HORTICULTURIST  
Orchard Director, Orchard Schemes Examined,  
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Values Examined for Farm Loans, Purchasing  
Agent for Land and Orchard Investments, Acts as  
Power of Attorney in Selection of Carey Act  
Lands.

MOUNTAIN HOME, IDAHO

## T. O'MALLEY CO.

COMMISSION MERCHANTS  
Wholesale Fruits and Produce

We make a specialty  
in Fancy Apples, Pears and  
Strawberries

130 Front Street, Portland, Oregon

**LAND**  
OF BIG, RED APPLES  
WE ALWAYS HAVE SOME  
CHOICE TRACTS TO OFFER

At popular prices, and sell them strictly on  
their merits. Years of study given to Hood  
River and its products. Can sell you intelligently.  
Call on or address

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Leading Land Agents Hood River, Oregon

We will plant and care for an

## Apple Orchard

for you until it begins to  
bear—meantime you make  
small monthly payments

As the largest  
orchard operators  
in the Spokane  
country we invite  
you to become  
interested with us  
and in a way enti-  
tely within your  
means. I will  
gladly submit full  
data, price of  
tracts, terms, and  
other information  
of value upon re-  
quest. Just request our booklet,  
"The Commercial Orchard," and say  
you want to know more. A postal  
will do.—A. G. Hanauer, Vice Presi-  
dent.



## Hanauer-Graves Company

First and Stevens  
SPOKANE, WASHINGTON  
Owners of  
MEADOW LAKE FARMS

Ten miles southwest of Spokane on Cheney  
Electric Line. Five and ten-acre tracts,  
\$150.00 to \$200.00 an acre. Your own terms.

# White Salmon Valley

## WASHINGTON

Across the river from Hood River Valley, Oregon in the Banner Apple Belt of the World



The WHITE SALMON VALLEY today presents OPPORTUNITIES FOR INVESTMENT beyond that of any other FRUIT REGION in the Northwest. It is the north half of a LARGE VALLEY lying between Mount Adams on the north and Mount Hood on the south. The mighty Columbia flows between and divides this valley. From the Columbia River to Mount Hood forms the Hood River Valley, and from the Columbia River to Mount Adams forms the White Salmon Valley. Both these mountains are snowclad all the year and influence the climatic conditions. This, together with a volcanic ash soil, produces apples that are superior to all others in the world in FLAVOR, SIZE, COLOR, and, most important of all, KEEPING AND SHIPPING QUALITIES.

Ninety per cent of the fruit grown in this valley is exported, bringing the highest market prices.

THE CLIMATE of this region is ideal. It is located in the midst of the CASCADES, with a pure mountain air and free from excessive rains or drought. The snow-covered peaks at either end of the valley temper the heat of summer and make the summer nights cool and invigorating. The winters are as a rule mild and short. The scenery is as fine as may be found anywhere on the continent.

The valley has been held back heretofore through lack of railroad transportation, but the SPOKANE, PORTLAND & SEATTLE RAILROAD, part of the Hill system, now in operation, gives this valley the best of shipping facilities.

NOW IS THE TIME TO SECURE A CHOICE ORCHARD TRACT AT A LOW FIGURE. Write today for particulars of this wonderful valley to the

WHITE SALMON VALLEY DEVELOPMENT LEAGUE

White Salmon, Washington

## WHITE SALMON ORCHARD LANDS

Over 1,000 acres of orchard land has been sold in this famous valley since December 15. This fact alone demonstrates what we have in values, soil and climate. From the fact one rancher produced 1,500 boxes of the finest quality of apples during the past season on less than five acres proves we raise the finest non-irrigated fruit in the world. At the rate land is now selling, more orchard land will be sold during the year 1910 than during the past four years. Do not delay in securing a desirable piece of orchard land before the demand exceeds the supply. Prices will never be as low again as at present. We are this month offering some exceptional bargains in orchard lands that will never be duplicated as soon as these are sold.

We list no land we have not personally examined, therefore guarantee every tract as represented, also furnish abstract up to date with every sale.

372. 40 acres with flowing spring water, red shot soil, fine view of Mount Adams, little if any waste land; about two acres fine hay land suitable for irrigation from the spring to raise hay for cow. In a proven fruit district, 12 miles out. A bargain at only \$45 an acre; half cash, balance 3 years at 8 per cent.

373. 40 acres adjoining the above, same kind of soil, spring water flows across the 40 on one side, thus affording plenty of water without damaging the land. Not over 3 to 4 acres but what can be used for fruit. For an immediate sale, only \$45 an acre, or if both 10's sold together only \$42.50 an acre; easy terms.

374. 80 acres within 4½ miles of White Salmon; two flowing springs, good neighbors; becoming settled up very rapidly. Fine apple land with beautiful view of Mount Adams, Mount Hood (snow capped the entire year), the Columbia River and the Cascade Range of Mountains. About 50 acres good orchard land, balance too rolling for fruit but could be used for pasture; also has good growth of fir suitable for buildings. New county road on one side this tract which will make the distance only 3½ miles from town. \$62.50 an acre, with easy terms, takes the 80.

371. 40 acres 2½ miles out, slashed and burnt over; about 30 acres good orchard land, balance too rolling for fruit trees; grapes could be grown on this. Being close in, this tract is cheap at \$2,500; half cash, balance 3 years, 8 per cent.

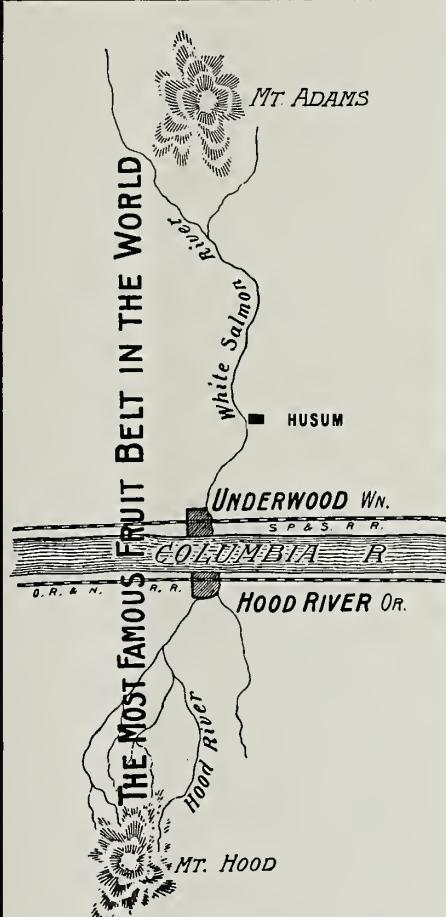
375. 80 acres 6 miles from White Salmon in well known fruit country; flowing spring water, on main road, red shot soil. Over 50 acres of good orchard land. This 80 is the best buy for the price in the entire valley; only \$37.50 an acre if sold this month; half cash, balance 4 years, 8 per cent.

SEND FOR BOOKLET AND COMPLETE LIST, AS WELL AS FOR GENERAL INFORMATION, TO

**THE WHITE SALMON REALTY CO.**

H. W. DAY, Manager

WHITE SALMON, WASHINGTON



# UNDERWOOD

*The Gateway to the White Salmon Valley*



WHITE SALMON VALLEY FRUIT GROWERS' UNION OF UNDERWOOD, WASHINGTON, WON THREE IMPORTANT PREMIUMS AT SPOKANE

First on Best Four-Tier Newtowns, Second on Best Ten Boxes Newtowns, First on Best Pack

Twenty minutes from Hood River by ferry. Two hours by rail, seven hours by boat from Portland. Twenty-five thousand acres first-class fruit land tributary to this point. Has a strong Apple Growers' Union, which controls the output of the valley. Same fruit, same markets, same prices as Hood River has. Fine class of people coming in—a community of homes. Land close in to river and railroad \$40.00 to \$150.00 an acre now, but advancing rapidly.

Write, phone or call on

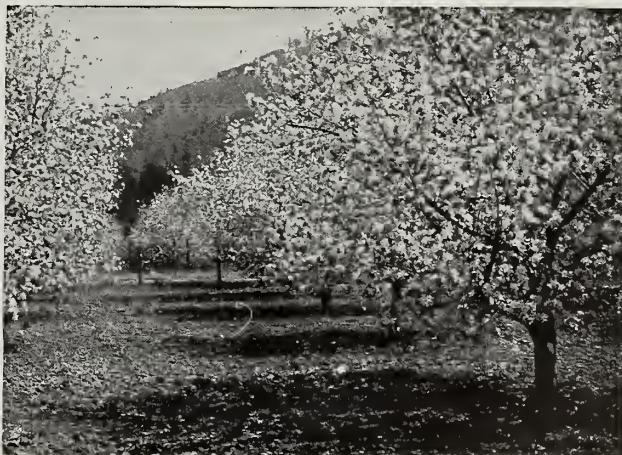
**W. F. CASH** UNDERWOOD  
WASHINGTON

## Newtowns Yield \$1800 per Acre

James Lacey on an acre of Newtowns marketed 791 boxes of first grade apples, which brought \$1,698.55. He has left fifty boxes of seconds, which will sell for about \$1.50 per box, and bring the total gross sales from one acre of Newtowns up to \$1,800. The returns from his three and a half acres of bearing apples, all kinds, are \$3,801.76 for first grade apples alone, and second grades will fully pay for the labor of taking care of the crop. This makes an average of over \$1,000 an acre profit.

*Live facts in a lively way. Live facts for men and women  
Facts that affect you—your family*

**HOOD RIVER VALLEY  
APPLE LANDS**



*Hood River Orchard in Bloom, Giving Promise of Golden Returns*

AGENTS FOR MOUNT HOOD RAILROAD COMPANY  
LOGGED OFF LANDS IN UPPER HOOD RIVER VALLEY

Many started in a small way; today they are independent  
You can begin today. It pays to see us  
*He who investigates for himself becomes "the man who knows"*

**W. J. BAKER & CO.**

HOOD RIVER, OREGON

The oldest Real Estate Firm in Hood River

First-class Apple Land our specialty

SEND TODAY FOR LARGE LIST OF ORCHARD LAND, IMPROVED  
AND UNIMPROVED, AND HANDSOME ILLUSTRATED BOOKLET

# Good Land At Prices That Are Right

M. C.V. 10 acres 3 miles out, on west side; 3½ acres 4-year-old Spitzenergs and Newtowns; 6½ acres 2-year-old Spitzenergs and Newtowns; 4 acres strawberries between young trees; splendid building site overlooking the east side and the Hood River; 10 shares water stock. Price \$9,000. Easy terms.

C-W. 10 acres 6½ miles out, on east side; 8 acres in 3-year-old Spitzenergs and Newtowns, 2 acres in clover; all very best volcanic ash soil; good neighborhood, near store and shipping station. Price \$7,500. Easy terms.

571. 10 acres 3 miles out, on west side; 500 6-year-old Spitzenergs and Newtowns; 150 3-year-old Spitzenergs and Newtowns; 25 3-year-old cherry trees; 6½ acres strawberries between trees; 2 acres buildings and pasture; home orchard of peaches, pears and bush berries; 5-room house, small barn, woodshed, chicken house; all farm tools, horse, wagon, hack, chickens, etc.; free water, good well. Price \$10,000. Easy terms.

562. 20 acres 7½ miles out, on east side; 4 acres in 4-year-old Spitzenergs, Newtowns and Ortleys; 4 acres in 1-year-old Spitzenergs, Newtowns and Ortleys; 8 acres in clover and alfalfa, 2 acres in oats; 4-room plastered house, closets; good well, barn, chicken house and

woodshed; team, wagon, harness, all farm implements, equipment and stock; 3 shares irrigation stock, 9 inches water. Price \$11,000. Easy terms.

WHG. 20 acres 4½ miles out, on west side; 16 acres in clover and alfalfa; 4 acres uncleared; all first-class apple land, beautiful building site; red shot soil. Price \$7,500. Easy terms.

D-V1. 20 acres 4 miles out, on west side; 5 acres bearing orchard; 3 acres 3-year-old pears; 11 acres 3-year-old Spitzenergs and Newtowns; 5-room house, good barn; volcanic ash soil; on main traveled road. Price \$18,000. Easy terms. 9 inches water stock.

D-V4. 20 acres 4 miles out, on west side; 5 acres pears; 15 acres 2-year-old Spitzenergs and Newtowns; 4-room house, good spring, small barn. Price \$16,000. Easy terms.

ICS. 21 acres 2½ miles out, on east side; 7 acres 13-year-old trees, 1,000 2- to 6-year-old Spitzenergs and Newtowns; 3 acres ready for trees; home orchard of peaches, pears, cherries, plums, etc.; 5-room house, barn, good well; 5 inches irrigation water; on main road, beautiful building site. Price \$21,000. Terms.

A word to the wise is sufficient—GET BUSY

**J. H. HEILBRONNER & CO.**

THE RELIABLE DEALERS

Davidson Building

HOOD RIVER, OREGON

## HOOD RIVER APPLE LANDS

*Pay Big Dividends—Values Will Double in Three Years*

WRITE FOR COMPLETE  
LIST OF PROPERTIES

35 acres, of which 22 acres are under cultivation and in orchard, there being 250 Yellow Newtowns, 130 Ben Davis and 120 Spitzenergs, Wagener's and Stark's, all 10 years old, and 1,000 Yellow Newtowns 1 year old; 13 acres are partly cleared and can be put under cultivation at an expense of about \$50 per acre. There is a large stone apple house worth \$1,500; an 8-room plastered house worth \$2,000; good barn; good well, equipped with new pumping outfit which cost \$700; 5-room tenant house and other outbuildings. This place is located right in the heart of the valley and will readily sell on the market for \$40,000 within one year's time, and is a snap at the price offered, \$30,000; \$13,000 cash and the balance on or before 5 years at 7 per cent.

26½ acres, about 7 miles south of Hood River, on county road; 25 acres of which is in 1-year-old commercial orchard of Newtowns and Spitzenergs, pollinated with Ortleys; two acres in strawberries. The place is slightly rolling and faces east and north. Fine red shot soil. Price \$500 per acre; \$5,000 cash, balance on or before 5 years at 7 per cent.

**Devlin & Firebaugh**

THE LEADING DEALERS

Swetland Bldg., Portland, Oregon

Hood River, Oregon



ORCHARD VIEW IN THE FAMOUS HOOD RIVER VALLEY, SHOWING MOUNT HOOD IN BACKGROUND

# BETTER FRUIT

A MONTHLY ILLUSTRATED MAGAZINE PUBLISHED IN THE INTEREST  
OF MODERN AND PROGRESSIVE FRUIT GROWING AND MARKETING

## THE COLORADO NATIONAL APPLE EXPOSITION

BY CLINTON L. OLIVER, SECRETARY OF THIS YEAR'S SHOW

A FEW years ago, should one have thought of spending a vast sum running into the thousands in promoting and carrying to a complete success an exposition where the apple was the only attraction, he would have been thought insane. However, times have changed, and now there is no more popular fruit than the apple and already several very large shows have been held with great success.

Perhaps the first great apple show was the one held in Spokane in 1908. Since that time the same section of the country has held another, and in addition to the shows in the Northwest has been held the Colorado National Apple Exposition, which was a great affair, indeed.

Under the direction of the Colorado fruit growers and the Denver Chamber of Commerce the organization was complete and could not but be an affair worth the price it cost in money and effort.

The question now arises, shall there be another? The writer feels no doubt on this score because the growers who took part in making the show the fine display of the "King of Fruits" that it

was, now feel that they have learned enough from their experience to make it absolutely necessary that they should

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every state that exhibited took some prizes. Colorado, of course, was the heavy exhibitor and practically all the large displays were by Colorado growers, with the exception of a carload from New Mexico and some sixty-six boxes from Wenatchee, Washington. Oregon had some plates, California had fifty boxes, Montana and Idaho had some boxes, Utah had about fifty boxes and Iowa, Missouri, Nebraska, Kansas, Michigan, Pennsylvania, Maryland and Georgia had some plates and a few boxes and barrels.

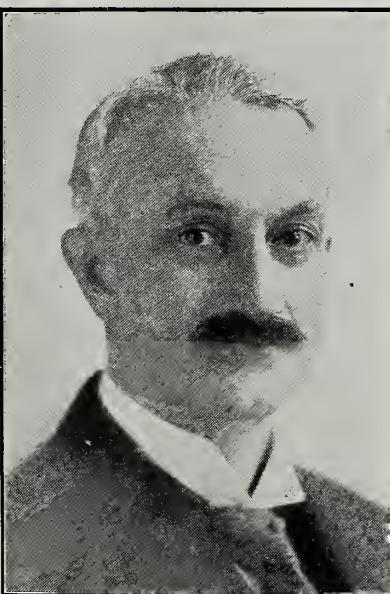
The Grand Junction Fruit Growers' Association took first prize with a mixed carload of Winesap, Arkansas Black and Rome Beauty. Fruita took second with a straight car of Black Ben Davis. Nelson Brothers Fruit Company, of Paonia, took third with a mixed car of Jonathan, Winesap, Rome Beauty and Grimes Golden. Growers from Canon City, Colorado, and Paonia, Colorado, and Wenatchee, Washington, took most of the prizes on the five and ten-box contests.

One of the displays that attracted a great deal of attention was that made by Ellsworth France and L. H. Titchenal, both of Wenatchee, Washington.

put their efforts into another, which must be better and larger in every respect. Never in the history of the fruit industry of this section of the country has there been such a demand for fruit lands as at present, and the prospects are that more orchards will be planted in the spring of this year than have been planted in any two years previous.

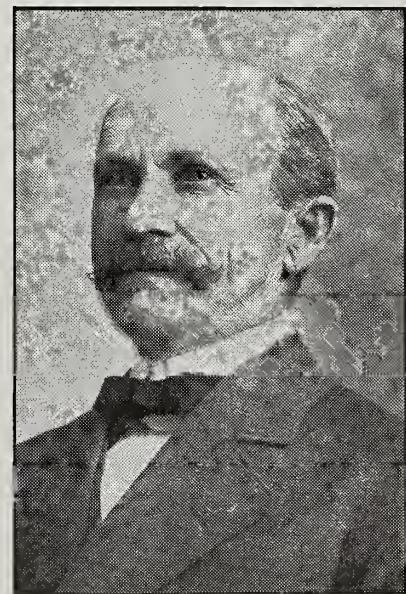
As an educational proposition there never has been anything carried on in the Middle West that has had the effect on the work of apple growers as this show will have. The displays at the show gave evidence of the need of education in packing and grading, and hundreds of growers who went to the exposition cock-sure of having the whole world skinned in quality of fruit and the grading and packing of that fruit, went home wiser and sadder than when they came. However, let it not be understood that they were in the least mite discouraged, because it has worked just the opposite, and the growers who were dissapointed have taken it all with good grace and have added to their determination to come back another year with all their defects of the past season wiped out and a perfect product, perfectly packed, for their next display.

The displays at the show represented fourteen states outside of Colorado, and it is pleasing to remark that practically



C. R. ROOT

President Colorado National Apple Show, Denver. Too much credit could not be given Mr. Root for his splendid ability in acting as president of this splendid show



J. F. MOORE

General manager Grand Junction Fruit Growers' Association, Grand Junction, Colorado, also first vice president of this year's Apple Exposition, Denver, Colorado

Several features of interest entered into their display, one of the most important being the fact that so much interest was taken in the discussion of the Lafean bill that many were interested in seeing what sort of pack the Northwest growers were putting in their box. Another feature was the comparison that must needs be made between the apples from a fruit section that is such a strong rival on the market with the Colorado apple. Because of the great care that was evidenced in the selection, grading and packing of this exhibit it carried away many valuable prizes that were looked upon with envy by the growers from sections nearer to the place where the show was held.

The expenses of the show were some less than the receipts, but this is all being taken care of by the Chamber of Commerce of Denver, and it is only a matter of a little time until every item will be checked and passed permanently.

The judges were highly praised for their eminent fairness in making awards. Professor Paddoek, of Columbus, was chairman of the judging committee and he had associated with him B. F. Coombs, of Kansas City, and E. T. Balch, of Wenatchee, in judging the carloads. C. P. Close, of Maryland, judged the plates and C. R. Greisen, of "Better Fruit," was the judge of photographs. Miss Headden, of the Department of Domestic Science at Fort Col-



TEN-BOX EXHIBIT BY J. A. LUILLEN, ECKERT, COLORADO, AT COLORADO NATIONAL EXPOSITION, DENVER, 1910

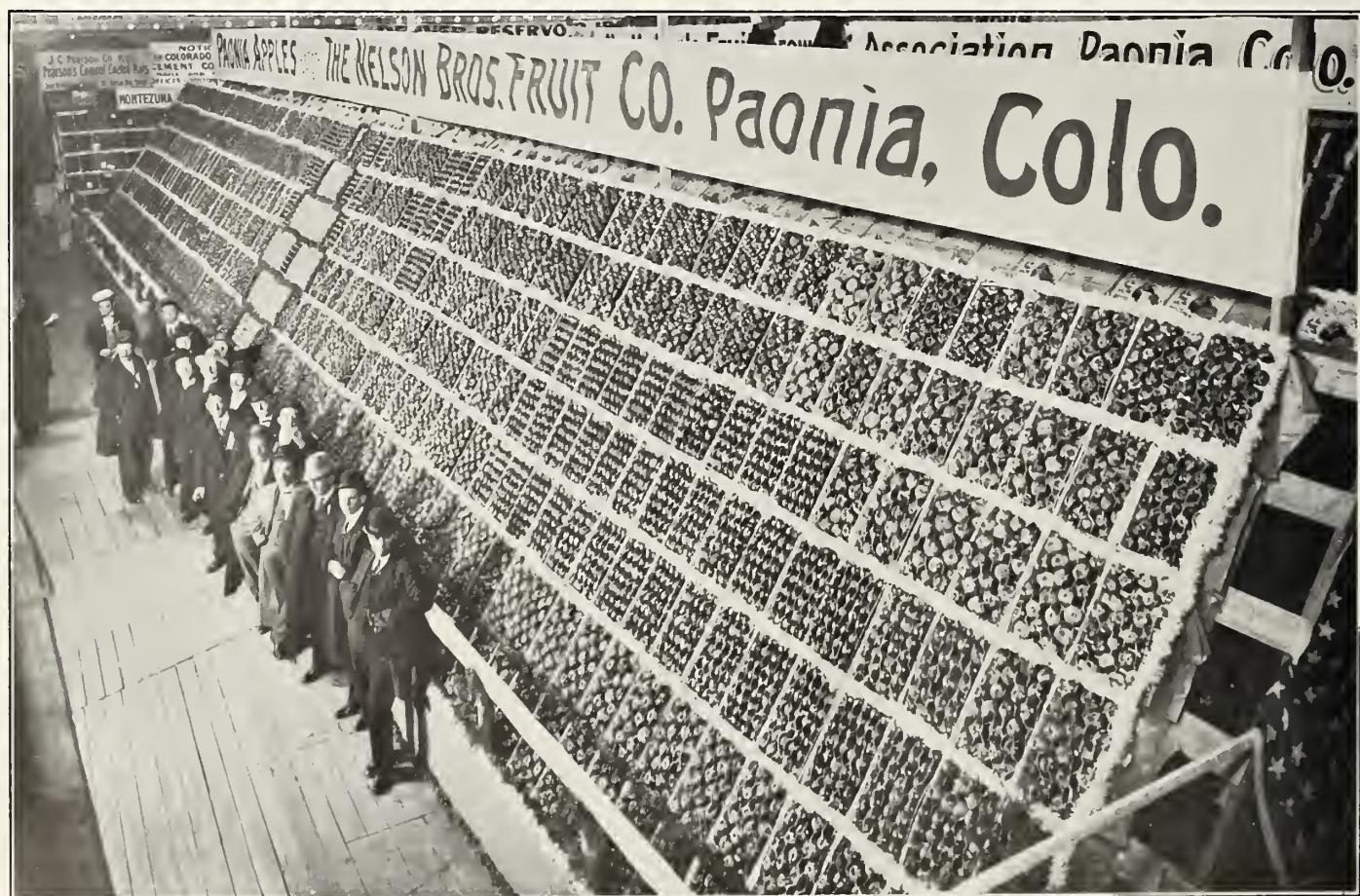
lins, Colorado, was the judge of the factory and home-made by-products.

A movement is now on foot that will probably bring to the front an organization of great strength whose main object it will be to carry on another larger and better show. This organization is being proposed by the fruit growers of Colorado, and they will no doubt make it the success that it ought to be.

One great feature in connection with the Apple Show in Denver that should not be overlooked is the Western Fruit Jobbers meeting that took place at the

time the apple show was on. It brought together the growers and the jobbers and gave them an opportunity such as they may not have in years in getting together and learning to know each other in a social as well as a business way. No doubt the acquaintances that were formed at the apple show will do much to spreading the markets for the growers, and let them into fields that have not been covered before.

Taking it all in all the show was all that the fondest hopes of the management could wish it to be.



PRIZE-WINNING CARLOAD EXHIBIT BY NELSON BROS. FRUIT COMPANY, PAONIA, AT COLORADO NATIONAL APPLE SHOW, JANUARY, 1910. THE NORTH FORK FRUIT GROWERS' ASSOCIATION, PAONIA, HAD A TWO-CARLOAD EXHIBIT ADJOINING THIS  
Engraved by Clason Map Company, Denver, Colorado

## ANTLERS-SILT DISTRICT, GRAND RIVER VALLEY

**N**O EXHIBIT in the Auditorium in Denver, where the National Apple Exposition was recently held, caused more attention and more favorable comment than that from the Antlers-Silt District of Garfield County, Colorado. This district is located nineteen miles west of Glenwood Springs on the main trans-continental lines of the Denver & Rio Grande and Colorado Midland Railways. Two of the fruit growers from this district made a beautiful display of Winter Banana and other varieties of apples, which caused probably more comment than anything at the show. The color, size and flavor of this fruit was widely remarked on and was voted by thousands the most beautiful exhibit at the show.

The blue ribbon box exhibit of these was sold at auction to the Antlers Orchard Development Company, of Colorado Springs, for the world's record price of \$52.50. This company, which owns land in this district, sent the box to President Taft as a special advertisement of what the Colorado people can

produce in this splendid district. It was a fine example of the highest development of this beautiful apple, the bright yellows and delicate pinks blending most exquisitely.

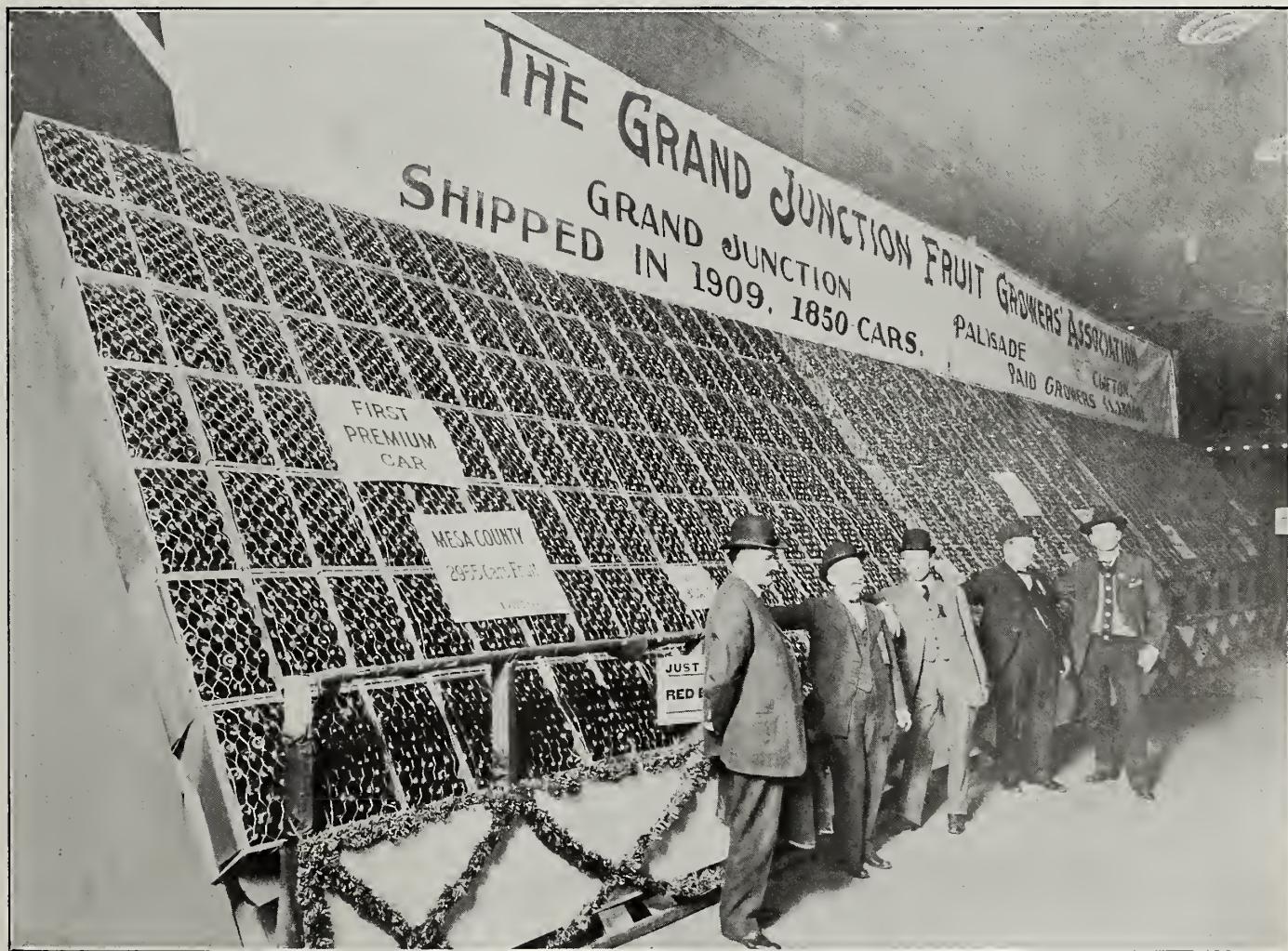
Besides the Winter Banana apples, the district made a good showing in box exhibits consisting of single, five and ten-box lots. The varieties included the Jonathan, Winesap, Rome Beauty, Gano, York Imperial, and a number of other varieties, all of which are particularly well adapted to the district. The color and size of these apples was excellent. The complete exhibit from the district included nearly thirty varieties, all of which were uniformly good and received splendid recognition from the judges. Eleven first, eight second and nine third prizes were awarded the district, which is an exceedingly creditable showing, considering the size of the exhibit.

Another world's record sale was made by Mr. C. H. Coe, of the Banquet Ranch at Silt, who sold eight boxes of Stark Delicious apples for \$15 per box. Mr. Coe came to Silt sixteen years ago with dred and fifteen first, second and third

hardly enough capital to make a start. Since that time he has made a study of apple growing and has one of the finest orchards in the district. He has amassed a fortune of over \$60,000 since he came into the community. He has built a beautiful orchard home which would be a credit to any community in the United States.

These boxes were exhibited under the Garfield County space on the main floor of the Auditorium, and were always the center of an admiring group of spectators. They were declared by Stark Brothers' representative at the show the finest example of this variety which he had ever witnessed. The color, size and uniformity being particularly good.

This district, though it has never been widely advertised, has long been a consistent winner at the various expositions. In 1904 one of the orchards captured the world's championship gold medal and two silver medals at the world's fair at St. Louis, for the best collection of perfect apples. One hun-



FIRST PREMIUM CARLOAD EXHIBITED AT THE COLORADO NATIONAL APPLE EXPOSITION, DENVER, 1910, BY THE GRAND JUNCTION FRUIT GROWERS' ASSOCIATION, GRAND JUNCTION, COLORADO  
The second gentleman from the left is J. F. Moore, manager of the association; the third is Frank R. Davis, assistant manager; the fourth is Mr. Chandler, inspector for the association.

Engraved by Clason Map Company, Denver, Colorado

prizes were also awarded to the exhibit from the district at the Colorado State Fair held at Pueblo, and the Inter-State Fair held at Denver in 1909.

The altitude of the district is about 5,500 feet. The soil of the mesa on which the orchards are located is a fine, sandy loam of extraordinary fertility. It is all well drained, and injurious alkali and all obnoxious desert weeds are unknown. In its unreclaimed state the land is covered with a splendid growth of white sage, which is recognized as Nature's mark of fertility. It is situated on the north side of the Grand River, nestling under ranges of hills which surround it on three sides and afford it unusual protection. Some 200 feet below, the Grand River winds its way to the Grand Canon of the Colorado, through which it plunges on its way to the Pacific waters.

The altitude of the mesa makes the season some two weeks later than that of the rest of the valley. This causes later blooming, which, together with the slope of the mesa, renders it immune from the spring frosts, and for the eighteen years in which the orchards have been producing, not a single crop has ever been lost from frost or any other cause, and the smudge pot is unknown.

There is a great deal of interesting work being done in the district. A Colorado Springs Irrigation Company is building a splendid irrigation system to water the entire section. This system includes a reservoir which has a capacity of 174,240,000 cubic feet of water and



EXCELLENT BOX AND PLATE EXHIBIT FROM MONTROSE COUNTY, COLORADO, AT COLORADO NATIONAL APPLE EXPOSITION, DENVER, JANUARY, 1910

*Engraved by Clason Map Company, Denver, Colorado*

a canal with a capacity of sixty cubic feet per second, eight miles long, from Rifle Creek, the source of the water, to the reservoir. There is nearly a half mile of tunnel through solid rock on this canal, and the whole irrigation system has been built according to the best standards in practice today.

A great deal of excellent work has also been done on the roads of the district. The land has all been laid off in ten-acre tracts with a road around each forty acres. Large sums of money have been expended in making these roads, cutting down grades, making fills and putting in culverts and bridges.

It is one of the few districts which has fully appreciated the value of a good road system. This will mean a yearly saving of thousands of dollars to the fruit growers of the district, and is highly commendable. In fact, everything which is done in the district has been done with the idea of making it a better fruit district than can be found elsewhere. The many natural advantages which the locality affords, have made this task easier, for in no part of the Grand Valley is better fruit grown than right in this favored community. The future for a district which makes a start like this one is assured.



TWO-YEAR-OLD ELBERTA PEACH ORCHARD NEAR ANTLERS, IN THE GRAND RIVER VALLEY, COLORADO

## THE W. F. J. A. CONVENTION HELD AT DENVER

WHEN the gavel fell calling to order the sixth annual convention of the Western Fruit Jobbers Association in Denver, Colo., the attending members and guests smiled at the vacant chairs reserved for those en route who, from telegrams received, were slowly emerging from the snow that had engulfed their trains and delayed their arrival. All incoming trains had been behind schedule, but everyone was good natured and the weather prophets predicted sunshine for the later convention days.

It was at 11:30 Wednesday morning that President Gees rapped for order. The invocation was pronounced by the Rev. Dr. Geo. B. Vosburg, followed by an address of welcome from Hon. John F. Shafroth, governor of Colorado. His remarks were followed by a round of applause, and were illustrative particularly of the necessity for uniformity in apple boxes. A. J. Spergal, president of the board of supervisors, and acting in behalf of the mayor, gave the visitors a warm welcome. His address was equally well received by the convention.

The response to the welcome extended was ably made by W. L. Wagner, of Chicago, who brought out by figures the magnitude of the business transacted yearly by the fruit jobbers. His remarks were well chosen and expressed the feeling evidenced by all members, guests and their families, that everyone was glad to be there.

The afternoon session opened with the president's address. The great progress of the association, so well known to its members, was dwelt on briefly and various instances cited where the work of the committees made itself

shown by reforms accomplished in questions involving rates, etc. The phenomenal growth of the membership, which this year amounted to practically 100 per cent over 1908, was mentioned and brought home to every member the real estimation in which the association is held by the trade and its growing popularity.

Wm. M. Roylance, of Provo, Utah, read a very interesting paper on "The Relation of Buyer and Seller." The evils resulting from the lack of close relationship were given in contrast to the benefits to be secured where confidence prevails.

The report of the secretary showed the association to be in good financial condition. The work carried on through the secretary's office and by the various committees, particularly that necessary for the betterment of existing rate evils, was responsible for the greater part of the year's disbursements and Mr. Branch suggested not less than \$10,000 as an annual income from dues to provide for the accomplishment of work now laid out and pending. According to his report the gain in membership was seventy-six for the year, and it is understood that several applications are now in the hands of the membership committee to be acted upon. The untiring efforts of Charles A. Kerr of Chicago to gain new members and his great success was particularly referred to and was greeted with applause.

The afternoon session of the first day adjourned with the reading of a wire from the St. Louis delegation saying that they were snowbound but on their way. The remainder of the afternoon was

spent by the members at the Colorado National Apple Exposition held in the Auditorium. A special request was made by the management of that show that



J. M. WALKER  
Newly elected president of Western Fruit Jobbers' Association, held at Denver, Colorado, January, 1910.

the visitors witness the apple packing contest held Wednesday and also view the exhibits.

A most complete series of entertainment had been arranged by the Denver committee. Members and guests, after enrollment, were provided with a book of "the program complete." The visiting ladies were given an informal reception Wednesday by the Denver ladies' committee.

A "get acquainted meeting" was scheduled for the men as a starter, followed through the week by theater parties, auto rides, a banquet, luncheons and in substance, the best kind of a time that could be had.

The Thursday morning session was called to order at 10 o'clock with the Laféan bill as the vitally interesting subject under discussion. N. G. Gibson of Chicago opened the discussion by giving the history of the work leading up to the present specifications embraced in the bill. For several years Mr. Gibson has operated extensively in Western box apples and his familiarity with all features from the standpoint of the growers, the middlemen and the retailers made his report of the working of the measures since the conception of the proposed bill of unusual interest. In his remarks Mr. Gibson stated that he did not think the Western growers fully understood the needs of the East. The demand of the retailer, as set forth by him, is a box to measure one-third of the apple barrel now in use and accepted as standard. This requires a box to measure 2,342 cubic inches.



CUP GIVEN BY THE DENVER FRUIT JOBBERS' ASSOCIATION FOR THE BEST CARLOAD EXHIBIT GROWN BY ONE GROWER AT THE COLORADO NATIONAL APPLE EXPOSITION, DENVER  
Won by A. B. Stoddard, Jr., Clifton, Western Slope, Colorado

Those interested were urged to take up the matter by letter with their congressmen and aid in every way its final adoption.

Mr. Wagner at once arose and moved that the report be received and adopted but the motion was held in abeyance on a suggestion from Wm. M. Roylance, of Provo, Utah, that it be withheld until the close of the discussions to follow. Copies of the bill were distributed.

The first discussion from the growers' standpoint was given by C. E. Whistler, of Medford, Oregon. He explained the experience undergone by the best Northwestern growers, extending over a period of fifteen years, with the object in view of securing a box to meet all requirements of packing of different styles and capacity. He stated that the box now in use, containing 2,173 cubic inches, held a full bushel, and expressed wonderment that the New York apple barrel should be held up to the Northwestern grower as a standard to conform to. It will be seen that a difference of 269 cubic inches prevails between the size of the box now in use and that prescribed in the Lafean bill.

L. F. Henderson, a delegate from Idaho, Wm. Nelson, of Washington, C.

S. Bailey, of New Mexico, W. J. Keats, of Darby, Montana, C. H. Sprout, of Hood River, Oregon, and L. H. Titchenal, of Washington, were each called upon in order named and indorsed the remarks presented to the meeting by Mr. Whistler. The consensus of opinion as given by these men, and they apparently spoke in behalf of the growers of their respective states, was that the apple box now in use in the Northwest should not be changed. That uniformity should be arrived at was advocated strongly but the point at issue, as gathered from the expressions of these growers seems to be the objection to the adoption of any box that would not enable the present style of packing, which unquestionably is at a high point of perfection, and which meets with approval from the trade in all markets.

Mr. Gibson replied to the various points and objections raised by stating that the retail dealers are discriminating in favor of the Colorado fruit principally because they can obtain four pecks from the boxes used by growers in this state, as against three and a half pecks from the Northwestern box.

One of the most interesting talks of

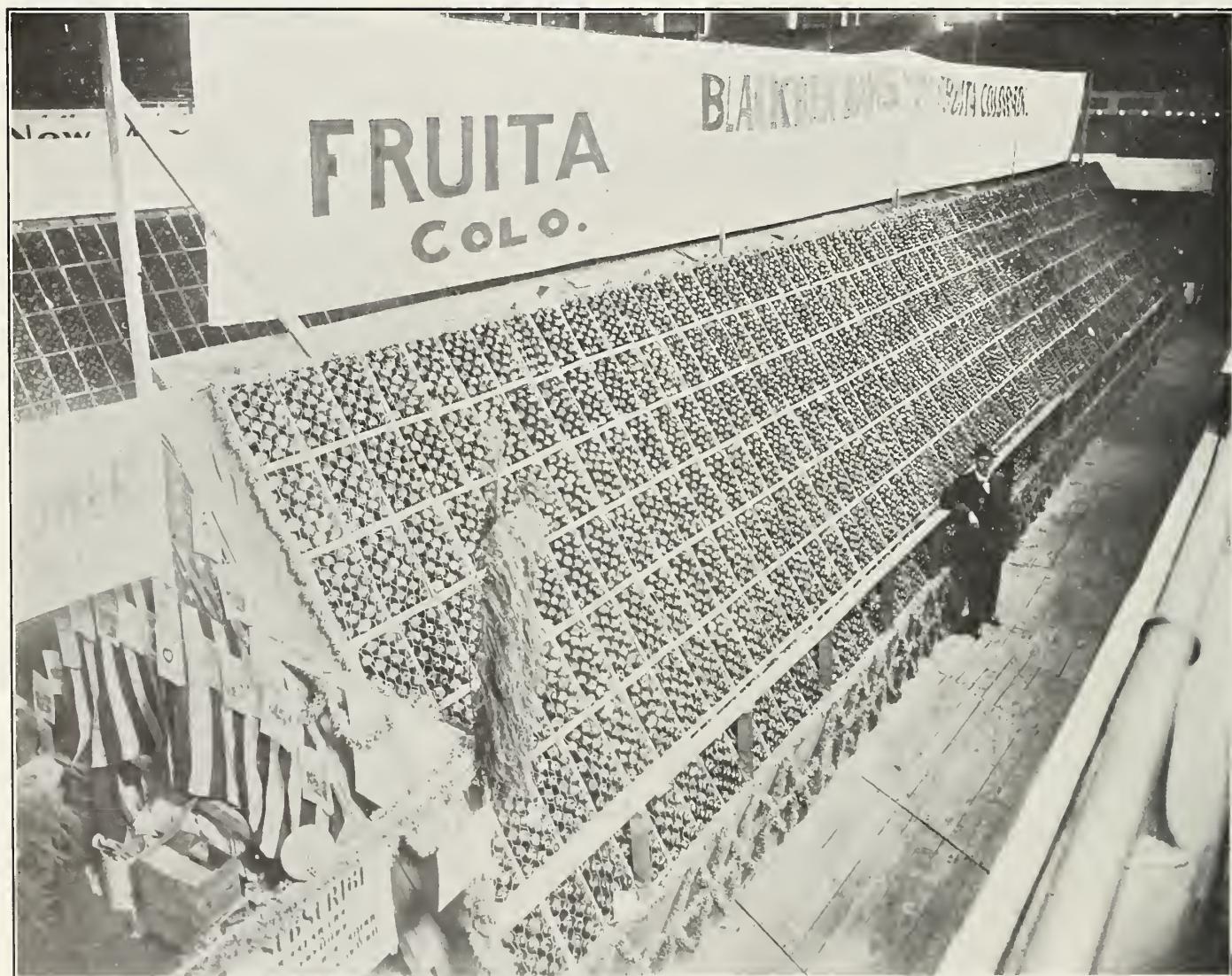
the day, president of the California Pine Box & Lumber Company. In his business Mr. Wending has had an unusual opportunity of viewing the rapid development of uniformity in boxes of all kinds used for fruit in California.

"I view this matter as a legal question," said Mr. Wending, "and one which will come under congressional ruling and be adopted."

The possibilities of raw materials and its relative importance to the ultimate decision was explained and impressed forcibly the importance of avoiding too great a variance with what is possible to obtain from the mill man's standpoint.

The State Board of Horticulture of Utah was represented by J. Edward Taylor. That body, as explained by Mr. Taylor, is taking a neutral position on the matter of apple boxes.

John Moore, sales manager of the Grand Junction Fruit Growers' Association, gave his views from the standpoint of the seller, acting in behalf of the grower. "The time is not far off," said Mr. Moore, "when with the heavy production of apples that is sure to come on account of the millions of new trees being planted, that growers in the West will be obliged to distribute more



PRIZE-WINNING CARLOAD EXHIBIT OF BLACK BEN DAVIS, FROM FRUITA, COLORADO, AT THE COLORADO NATIONAL APPLE SHOW, DENVER, COLORADO, JANUARY, 1910  
Engraved by Clason Map Company, Denver, Colorado

through the South and the Middle West. This means lower prices and quality, which will bring Colorado fruit into increased popularity on account of the low cost of pack and the box now in use, as against the better pack, no doubt, of the Northwest, but the increased cost of production there and the box which now is of less size than that in use in the Grand Valley."

Following Mr. Moore, W. L. Wagner, of Chicago, gave an exhaustive talk on the original Porter bill and its changes and modifications into the Lafean bill as it stands at present. He scored the representatives from the Northwestern states who came, he said, prejudiced against the bill and acting under orders as it were from the communities of growers whom they represented.

"This standardization of the apple box is the outcome of commercial necessity," said Mr. Wagner, "and the work towards gaining a uniform box is a step towards the future necessity of fostering home markets—looking at the matter from the viewpoint of the dealer, and anticipating future needs of foreign and domestic markets."

Following an interesting talk by G. S. Liebhardt, of Pueblo, a vote was taken on Mr. Wagner's motion that N. G. Gibson's report be received and adopted. This was carried unanimously by a rising vote.

Some very interesting papers were read at the afternoon session. The secretary read a paper submitted by P. A. Grey, commissioner of the Pueblo transportation committee, who could not be



PYRAMID OF PLATE EXHIBITS AND BOX DISPLAY FROM FARMINGTON, SAN JUAN COUNTY, NEW MEXICO, AT COLORADO NATIONAL APPLE EXPOSITION, DENVER, 1910  
Engraved by Clason Map Company, Denver, Colorado

present, dealing with a recent advance of rates on banana carriers returned. F. J. Coates, of Grand Island, Nebraska, gave a brief talk on "Deductions," followed by a lengthy paper read by Geo. D. Kellogg, of New Castle, California, on "Pre-Cooling of Fruits for Shipment." Mr. Kellogg personally shipped fifty-

seven cars of fruits of all kinds during 1909, all of which were pre-cooled successfully, and his explanations of the methods employed were of great interest at this time.

The report of Z. T. Fort, of Denver, showed that the convention in number of members and visitors present was the most successful since its existence.

The reports of various committees followed, indicating a prosperous and result-achieving year enjoyed by the association.

An address from J. C. Lincoln, president of the National Industrial Traffic League of St. Louis, was looked for with great interest by all the members. Mr. Lincoln is said to be one of the best informed men on traffic matters in the country and it was a great disappointment when a wire was received announcing his inability to be present on account of illness.

Z. J. Fort gave a stirring talk on the "Business Relations Between Members," in which he urged closer co-operation in the mutual buying and selling of such products as they all handle.

A part of the afternoon was given over to short talks and concluded with an address from E. H. Royer, of Des Moines, Iowa, on "The Aims and Methods," of the association. The subject was admirably handled and elicited great applause.

Friday morning C. F. Kerr, chairman of the membership committee, opened the meeting with a report showing the great growth of the association by the addition of new members during the past year. He strongly urged that the annual dues be reduced to \$30 and spoke of the necessity of the co-operation of all members to instill new life into the organization.

Following Mr. Kerr H. M. Jones, of New York, read an interesting paper on



FINE BOX EXHIBIT OF PROVO COMMERCIAL CLUB, PROVO, UTAH, AT THE COLORADO NATIONAL EXPOSITION, JANUARY, 1910  
Engraved by Clason Map Company, Denver, Colorado

"Making the Market." The evils resulting from incorrect reports of market prices and conditions were cited and several suggestions offered which were endorsed by vigorous applause.

It was in the air that there would be something doing at this session, and the opening shot came when H. M. Jones next arose and suggested that the regular order of business be changed and that instead of being the closing number of the program, as heretofore, the election of new officers for 1911, also the selection of the point for the next convention, be made. The motion was seconded by W. L. Wagner, and the statement next made by President Gees that it was contrary to the custom brought out a lively discussion. Several arguments pro and con were advanced, with the ultimate result, by a rising vote, of the motion carrying and the election slated for the opening of the afternoon session. Mr. Wagner at this point suggested the appointment of a nominating committee consisting of C. A. Kerr, of Chicago, W. W. Copeland, of Burlington, Iowa, and W. S. Kirk, of Kansas City. This committee then withdrew, and following the reading of the report of the committee on resolutions, they announced that the following nominations had been made:

For president, R. H. Pennington, Evansville, Indiana; first vice president, W. M. Roylance, Provo, Utah; second vice president, Geo. D. Grupe, Cedar Rapids, Iowa; third vice president, J. E. Stewart, St. Louis; treasurer, J. M. Walker, Denver; directors, R. W. Gees, Kansas City; S. E. Lux, Topeka, Kansas; C. B. Bells, Sacramento, California; E. H. Emery, Ottumwa, Iowa; W. L.



DELTA COUNTY, COLORADO, EXHIBIT AT NATIONAL HORTICULTURAL CONGRESS COUNCIL BLUFFS, IOWA, NOVEMBER, 1909

Out of forty-two possible prizes this county got thirty-six, besides first on general display. Exhibit in charge of W. H. Richardson, county fruit inspector; Dr. A. E. Miller, Austin, and Leonard Baird of the Wire-Baird Realty Company, Delta, Colorado.

Wagner, Chicago; J. Grainger, Lincoln, Nebraska, and E. E. Merrill, Minneapolis, Minnesota.

Friday afternoon, when the final session was called to order, it showed the largest attendance of any meeting of the convention. The whirlwind finish of the morning discussion and the important subjects to be handled brought out every member and guest. The selection of the convention city for 1911 was first on the docket and it was a foregone conclusion that Sacramento, California, was the favored point. G. X. Wendling, H. M. Jones, C. C. Buffington, T. A. Cargill and H. M. Wagner all gave the members rousing talks on the advantages of the California point. Letters and telegrams pledging the support of the business organizations of the state were read and while J. E. Stewart, of St. Louis,

made an urgent plea in behalf of that city that the convention meet there, a vote by ballot brought out a majority in eighty-one votes cast of thirty-one in favor of Sacramento as the convention city for 1911.

At this point a crossfire of opinion relative to the manner of voting on the candidates for offices nominated caused President Gees and W. L. Wagner to engage in some sharp controversy, with the result that the voting for the new president was segregated from the balance of the ticket and voted on singly. Two candidates were in the field, R. H. Pennington, of Evansville, Indiana, and J. M. Walker, of Denver. In nominating the latter, Mr. Liebhardt made a most convincing talk, and notwithstanding the impressive endorsements of Mr. Pennington by W. L. Wagner, Chas. A. Kerr and others, Mr. Walker was elected by ballot vote by a majority of twelve out of eighty votes cast.

The remaining officers and directors were elected unanimously, being the candidates nominated originally by the committee, with the exceptions of the election of E. H. Royer, of Des Moines, Iowa, to fill the position of treasurer, and W. H. J. Kavanaugh, of Chicago, to act as sergeant-at-arms. The secretary's office will, by an amendment passed, be filled by the new board of directors instead of by vote of the convention, as has heretofore been the custom.

Resolutions of thanks to the Denver hosts and hostesses were passed, and with a brief speech from the new president and cheers and congratulations for those who will handle executively the affairs of the association for the balance of the year, the sixth annual convention was officially closed.

Before final adjournment the members bought at auction nine cars of apples offered by the exhibitors at the apple exposition.

The banquet Friday night at the Savoy hotel, arranged by the Denver hosts, was the closing feature. This and all other forms of entertainment provided by the Denver dealers was a decided success, and the association members and others are loud in their praises.—Packer.



THE JUDGES AT COLORADO NATIONAL APPLE EXPOSITION, DENVER, JANUARY, 1910  
From left to right: E. T. Bales, Wenatchee, Washington, on carloads; C. P. Close, state horticulturist, Maryland, on plates; B. F. Coombs, Kansas City, Missouri, on carloads; Professor Wendall Paddock, Columbus, Ohio, chairman of judging committee; C. R. Greisen, of "Better Fruit," on photographs and improved packages. Miss Headden, of the department of domestic science, of Fort Collins, Colorado, was the judge of factory and home-made by-product.

Engraved by Clason Map Company, Denver, Colorado

## DIFFERENT METHODS OF IRRIGATION IN COLORADO

BY W. H. OLIN

**D**EFINITION: "Irrigation is the watering of land by artificial means to enable crops to be grown or to increase production."—Dr. Elwood Mead.

A water right is regulated and defined by state statute. It is the right to divert water from any stream, reservoir or canal, to cross land for irrigation purposes. The right which is first taken out is said to have priority over all others, and its legal claim of precedence established, gives it priority rights which must be recognized as first claim to irrigation water from stream, canal or reservoir from which it draws its supply.

Early priorities are, therefore, important, and add to the commercial value of a water right.

A water right, purchased by a farmer from a company owning and operating an irrigating system of canals, is regulated by the contract between the party purchasing the right and the company owning canal furnishing the water. Irrigating canals are given the right to appropriate water from streams in Colorado according to the priority decreed by the court, which is always asked to adjudicate or declare it. All irrigating waters in Colorado are distributed in accordance with court decrees, based on appropriations, priority claims and the statutes governing irrigation practice.

This plan absolutely safeguards the water rights of a water user.

Water rights are of two kinds:

A direct water right gives owner of same authority for "direct use" of water from stream or canal. Irrigating canals possess appropriations for this purpose, according to date of right established by court decree and for the amount named in said decree.

A storage water right gives legal authority for impounding water in reservoirs as a storage supply for use, as



TEN-BOX DISPLAY FROM THE WENATCHEE VALLEY, WASHINGTON  
Winners of first prizes in every entry. By Ellsworth France, Wenatchee, and L. H. Titchenal, Cashmere, Washington. Both gentlemen appear in front of the exhibit. Colorado National Apple Exposition  
Engraved by Clason Map Company, Denver, Colorado

may be desired. Like the direct water right, this right possesses appropriation in order of date, by court decree.

Tonge's "Handbook of Colorado" says: "A canal or company having an appropriation for 'direct use' can not take water from the stream at any season of the year for 'storage' purposes under that appropriation, nor can a reservoir having an appropriation for 'storage' purposes, take water from the stream at any season of the year for 'direct' use, or even for storage, until the canals entitled to water for 'direct' use have been satisfied."

Some of the more recent appropriations of water have to depend upon

"flood water." This means that the owners of flood water rights are not allowed to take water from the streams until all the prior appropriations are supplied. When there is high water in the stream all are well supplied and flood rights are practically as good as any other, since there is then water for all.

Where there is normal or low water in the stream, flood rights may be cut down in amount of water or entirely deprived from use of any water to supply or protect the adjudicated or decreed rights having priority. For this reason "flood water" rights are not considered as valuable as other water rights.

To protect the water rights of water users and supervise distribution of irrigating waters the state legislature, in 1879, created the office of state engineer.

He has divided the state into water divisions, and these divisions in turn into districts. For each irrigation division—at present there are five—is a division engineer, who is responsible for gauging (measuring) of streams in his district, distribution of irrigating waters in the various districts for each of which is provided a water commissioner.

Good water rights are absolutely essential to success in farming "under the ditch."

Dr. Mead defines the duty of water in irrigation "as the area of crop which can be matured with a given volume of water. An approximate knowledge of the duty of water is as necessary in the distribution of water in irrigation as a unit of value in finance and trade."

The duty of water varies widely with local conditions, character of crop, quality of soil, physical condition of the field, season of year, seepage, evaporation, and character of farmer using the



CARLOAD EXHIBIT FROM MONTEZUMA VALLEY, COLORADO, GROWN BY W. T. BOZMAN, CORTEZ, COLORADO NATIONAL APPLE EXPOSITION, DENVER, 1910  
Engraved by Clason Map Company, Denver, Colorado



JOLLY TRAINLOAD OF GARFIELD COUNTY BOOSTERS, FROM THE WESTERN SLOPE OF COLORADO, ON THEIR WAY TO THE COLORADO NATIONAL APPLE EXPOSITION AT DENVER

water. One farmer may obtain 50 per cent more efficiency of a given volume of water than another farmer. This difference is accounted for by the greater skill or negligence, economy or waste of water by one farmer over the other farmer. Certain fundamentals are essential for the irrigation farmer to know, that he may conserve his irrigation water and obtain from it the highest duty possible.

Use the least quantity of water necessary to secure the best yield. Use that

method of distribution which the crop and the soil suggest will give the best watering in the least possible time with a minimum of loss; irrigate at such times as growing conditions indicate are the most desirable to maintain vigorous, constant growth from germination to maturity; use a "full head" when distributing on the field and cover all parts of a given area—leaving no "bare spots" (unwatered portions)—are irrigation axioms which enable farmers often to raise the efficiency of a water share or

right in a few years to nearly double its former duty.

Irrigation farming calls for the highest class of farmers, and, in return, yields a greater net profit per acre on every crop adapted to this class of farming than any other farming depend-

#### SUMMARY OF COST FOR A FIVE-YEAR PERIOD BY CHECK METHOD

Period	Requirements	Av. Min. Cost		Av. Max. Cost	
		Per Acre	Per Acre	Per Acre	Per Acre
First Year	Building check and laterals.....	\$8.00		\$16.00	
Second Year	Irrigating three times.....	.50		1.50	
Third Year	Repairing and irrigating.....	.75		1.75	
Fourth Year	Repairing and irrigating.....	.75		1.75	
Fifth Year	Repairing and irrigating.....	.75		1.75	
	Average yearly cost.....	2.30		4.90	

#### SUMMARY OF COST OF FLOODING METHOD FOR A PERIOD OF FIVE YEARS

Period	Requirements	Av. Min. Cost		Av. Max. Cost	
		Per Acre	Per Acre	Per Acre	Per Acre
First Year	Grading the surface and building field ditches.....	\$2.00		\$5.00	
Second Year	Irrigating three times.....	1.00		2.75	
Third Year	Repairing ditches, making laterals and irrigating.....	1.20		3.00	
Fourth Year	Repairing ditches, making laterals and irrigating.....	1.20		3.00	
Fifth Year	Repairing ditches, making laterals and irrigating.....	1.20		3.00	
	Average yearly cost.....	1.56		3.95	

#### SUMMARY OF COST OF FURROW METHOD FOR A PERIOD OF FIVE YEARS

Period	Requirements	Av. Min. Cost		Av. Max. Cost	
		Per Acre	Per Acre	Per Acre	Per Acre
First Year	Making head ditches and furrows.....	\$1.00		\$10.00	
Second Year	Irrigating three times.....	1.50		2.25	
Third Year	Making furrows and irrigating.....	2.00		2.75	
Fourth Year	Making furrows and irrigating.....	2.00		2.75	
Fifth Year	Making furrows and irrigating.....	2.00		2.75	
	Average yearly cost.....	2.10		4.05	



CLINTON L. OLIVER  
Secretary Colorado National Apple Show, held at Denver, 1910, to whose splendid work and untiring energy the National Apple Show owes its success.

ent solely upon the annual precipitation of moisture.

There are three units of water measurement which each farmer should consider and fully understand. They are the inch, the cubic foot per second, and the acre-foot. The general statutes of Colorado, 1883, section 3472, clearly defines how water sold by the inch shall be measured. "Every inch shall be considered equal to an inch-square orifice under a five-inch pressure, and a five-inch pressure shall be from the top of the orifice of the box put into the banks of the ditch to the surface of the water; said boxes, or any slot or aperture through which such water shall be measured shall in all cases be six inches perpendicular, inside measurement, except boxes delivering less than twelve inches, which may be square, with or without slides; all slides for the same shall move horizontally and not otherwise; and said box put into the banks of ditch shall have a descending grade from the water in ditch of not less than one-eighth of an inch to the foot."

This unit of measurement is our oldest unit, and because of its first having been used by the placer miner, the irrigator borrowed it from him and calls it the "miner's inch."

It is a practical unit for measuring small quantities of water, but is not practical for stream or large canal measurements. It is, in all reports, spoken of as the statutory inch, since its limits are defined by statute.

The cubic foot per second is the unit of volume for gauging rivers and measuring the flow of ditches and irrigating canals.



BOX AND PLATE EXHIBIT FROM ARKANSAS VALLEY, OTERO COUNTY, COLORADO  
AT COLORADO NATIONAL APPLE SHOW, DENVER, 1910  
Engraved by Clason Map Company, Denver, Colorado

The volume of flowing water passing over the weir (device for measuring the water) in a second of time is measured in cubic feet. A cubic foot of water in our state is 38.4 statutory inches, equivalent to seven and one-half gallons of water.

The acre foot is a unit for measuring reservoir or stored water. It is the amount of water necessary to cover an acre to the depth of one foot, equal

therefore, to 43,560 cubic feet. One cubic foot per second of water in a stream flowing constantly for twenty-four hours equals approximately two acre feet, says Dr. Mead, so we have a means of converting cubic feet per second units into acre feet, and vice versa.

Ditch companies can buy, sell or trade water with the same accuracy and exactness as they would any other commodity of trade and traffic.

For the convenience of water users, all canals have water measurers, who distribute water according to water contracts. These parties are commonly spoken of as "ditch riders," and are supposed to divide the water to users during the irrigating season in the most economical and equitable manner that is possible.

Bulletin No. 145, from United States office of experiment station upon "Preparing Land and Irrigation and Methods of Applying Water," will give helpful information to new settlers upon irrigated farms. Following are some condensed and pertinent statements from said bulletin. Owing to extreme conditions of soil, land surfaces, crops and water supply, it is impossible to give exact statements of the cost of preparing land and applying water, and, therefore, two sets of figures are given, one showing an average minimum cost and the other an average maximum cost. When conditions are favorable the cost will approach the lower estimate. On the other hand, when the land is uneven the water supply scanty, or permanent structures are introduced, the cost may be increased to the higher limit.

To insure a just basis for comparison the wages of one man working ten hours, including board and implements, was taken at \$2.50, and a man and team



GARFIELD COUNTY CARLOAD EXHIBIT AT COLORADO NATIONAL APPLE EXPOSITION  
DENVER, 1910

The exhibit in foreground is eight fifteen-dollar boxes of Stark Delicious apples grown in the Antlers Silt district of Grand River Valley, Colorado, by C. H. Coe.

for the same time at \$3.50. The estimate of cost also includes three irrigations for the season.

A light, sandy soil on a comparatively level slope of from three to fifteen feet to the mile is usually looked upon as best suited to the formation of checks. The same method may be used on heavy clay loams, providing the surface will not bake after being flooded.

A field having a steep slope should not be irrigated by this method. Some other plan of wetting the soil should be used. The size of checks in common use varies from three-fourths of an acre to two and three times that area.

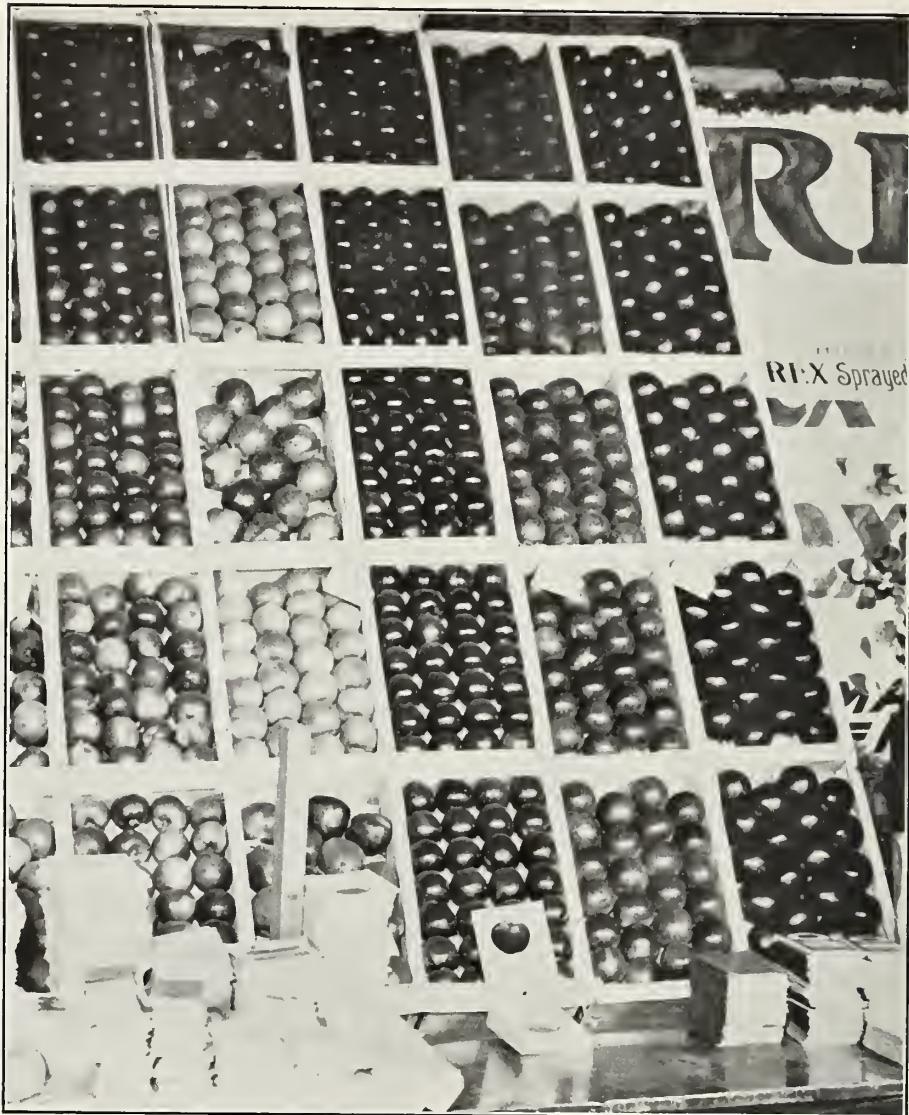
This method is seldom, if ever, used in Colorado, although quite generally used in irrigated regions of Asia, Africa, Europe, Mexico, and San Joaquin Valley, California, and the Southwest. The crops usually grown under this method are alfalfa, grain, grape vines, and sugar beets. This method requires a large head or volume of water. Farmers not able to obtain a head of from five to ten cubic feet per second should use some other method.

The method of flooding from field ditches is the one commonly practiced for practically forty years, in the major portion of irrigated sections of Colorado, Utah, and adjoining states for practically all grain and grass crops.

The expense incurred in preparing the land to receive water is small in comparison with some other methods.

In old established colonies in Northern Colorado, field laterals for flood irrigation are laid out according to the lay of the land, the way the water must run. Formerly, irrigators made these laterals 200 to 300 feet apart and forced water to cover the entire surface intervening. Experience has taught them that time and water are both saved by making these laterals from seventy-five to ninety feet apart.

The successful irrigator seeks to cover the higher portions of the field between laterals first and advance the sheet of water uniformly over the area irrigated, so that all parts of that section of the field to which water is being applied may receive as far as possible, the same amount of water. Canvas dams are placed in the laterals so as to back up the water for a distance of at least



PRIZE-WINNING FIVE-BOX DISPLAY FROM WENATCHEE AND YAKIMA VALLEY, WASHINGTON, AND BITTER ROOT VALLEY, MONTANA, AT COLORADO NATIONAL APPLE EXPOSITION, DENVER, 1910

Engraved by Clason Map Company, Denver, Colorado

seventy-five feet and the water is allowed to flow through cuts made in the bank at stated intervals, just where the irrigator desires it to go.

With a head of two to two and a half cubic feet per second, the irrigator in Northern Colorado finds he can spread water over his fields between laterals

placed, as named above, with comparative ease.

In the San Luis Valley laterals are placed much farther apart and somewhat different system of irrigation is practiced. Here the water "subs" up between the laterals and after proper distance is determined, laterals made



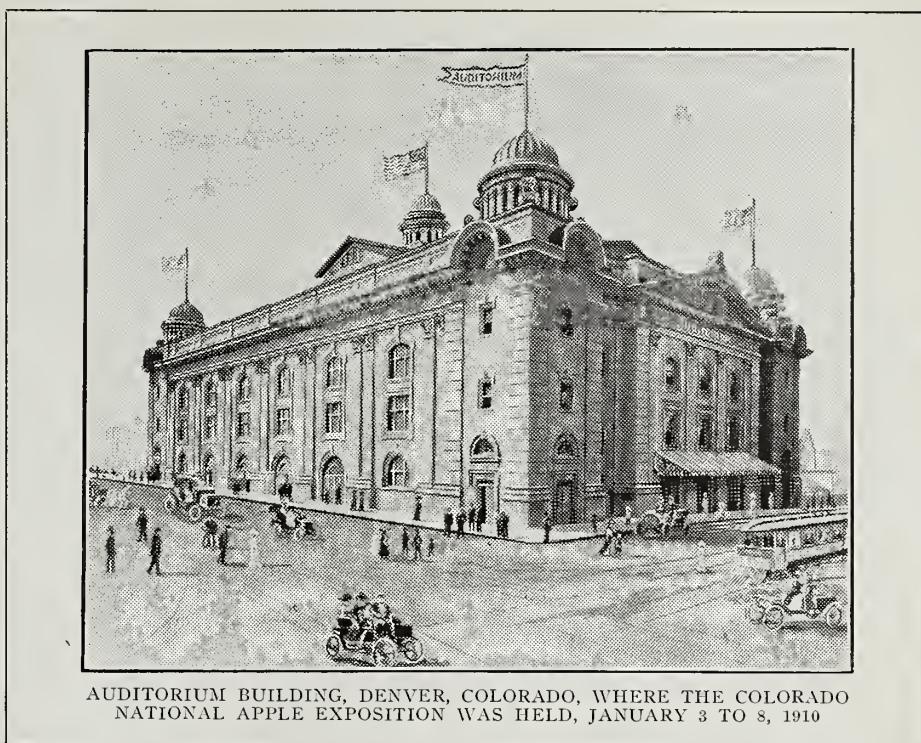
BIRDS-EYE VIEW TAKEN FROM THE CAPITOL OF THE DOWN-TOWN SECTION OF DENVER, COLORADO, WHERE THE COLORADO NATIONAL APPLE SHOW WAS HELD

and water turned in, the fields in many sections of this great mountain valley practically irrigate themselves. It is a system of irrigation peculiar to that soil formation, and one must become familiar with local conditions or the irrigator, as one has well said, may irrigate eighty acres underground while he is getting one acre on the surface well moistened.

No detailed cost for sub-irrigation as practiced in San Luis Valley is at hand, but it is not as expensive as the usual flood system given above.

Furrow irrigation is the method used for root crops and by the orchardists in Colorado. The method of planting sugar beets and potatoes is favorable to this system, although some sections of the state use the flood method for first irrigation of sugar beets.

The distance which a stream of water can be successfully run in furrows, depends upon the texture of the soil through which they extend and the lay of the land. Where the soil is coarse and absorbs water quickly, the distance for the same head of water must be shorter than where the texture of the soil is finer and absorbs water more slowly. The stream in the furrows must be made to flow with a velocity sufficient to carry it to the lowest extremity of the field or the next lateral below, but at the same time, must not flow with such swiftness as to cause scouring of the banks of the furrow or cutting deep into the furrow. Certain potato farmers use a special implement for "furrowing out" these row laterals which gives a furrow of sufficient depth for them to run a head of water through the furrow which wets the potato roots but does not wet the tuber bee. They contend that this plan enables them to produce a very superior quality of potatoes. Many potato growers practice the method of alternate row irrigation. They will irrigate all odd numbered rows one day in a given area and the even rows the next day. This moistens but one side of the potato hills and lessens the chance of over irrigation, allows sub absorption of water for all



AUDITORIUM BUILDING, DENVER, COLORADO, WHERE THE COLORADO NATIONAL APPLE EXPOSITION WAS HELD, JANUARY 3 TO 8, 1910

potato roots, and will absolutely prevent any possibility of sun scald while irrigating. Orchard irrigation is in a class by itself and one needs to make a study of the kind of fruit to be irrigated, the character and texture of soil and slope of the land, as well as age of trees and space between rows.

It will be seen that the average maximum cost by the most expensive method of irrigation is less than five dollars per acre. This is a crop insurance for you get the water when you want it, put it where you want it, and in the proper amount to absolutely insure maximum plant growth. The tendency with new settlers is to over-irrigate. From experienced farmers who now irrigate most successfully, permit the writer to quote:

First: "Run the main lateral along the highest portion of the farm. It will

command the greatest irrigable area and will save future labor, time and, therefore, money.

Second: "See that your laterals are laid out to the best advantage at the outset and that your fields are thoroughly graded. You cannot prepare your fields too well for irrigation purposes.

Third: "In narrow irrigation always place a check dam in head ditch opposite the lowest furrow of the strip to hold the water at the desired elevation and to distribute the flow between the furrows. The number of furrows which should receive water at one time will depend on the crop, the volume of water in the head ditch and the smoothness and texture of the soil.

Fourth: "See that the streams flow down each furrow in an equal quantity without damming and flooding the crop.

Fifth: "As soon as soil is sufficiently dry, fill in the furrows and cultivate space between the rows.

Sixth: "Sometimes it is desirable to irrigate grain, clover, or alfalfa from corrugations or shallow furrows on account of liability of the soil to bake. These are usually formed by home-made implements. The distance between corrugations or shallow furrows varies with character of crops and slope of ground, from six inches to thirty inches apart.

Seventh: "The frequency of irrigation and the amount of water to be applied each time must be decided by each farmer in accordance with the character of his soil and the crop he is growing.

"You cannot irrigate by the clock. You must put water on when the crops need it and take it off when the want is supplied. Enough water is better than much.

"Two irrigations are usually sufficient for small grains and grass. Four or



CARLOAD EXHIBIT AND GENUINE NAVAJO RUGS FROM SAN JUAN COUNTY, NEW MEXICO, AT COLORADO NATIONAL APPLE EXPOSITION, DENVER, JANUARY, 1910  
Engraved by Clason Map Company, Denver, Colorado



PLATE DISPLAY AT THE COLORADO NATIONAL EXPOSITION. DELTA COUNTY, COLORADO, ON THE LEFT. THIS COUNTY WAS ONE OF THE BIG PRIZE-WINNERS

Engraved by Clason Map Company, Denver, Colorado

five are required for young orchards. Melons and sugar beets should have no water for some time previous to maturity of the crop. Alfalfa, clover and timothy should have no water during the maturing of the seed, if seed is desired. Some foresight is required in using the water at your command, so that sections of the land may be irrigated consecutively for economy of both water and labor of applying it. Above all, watch your work. Each little stream requires attention."

Above suggestions will be found most helpful to all rainbelt farmers coming into Colorado's irrigated districts to farm.

A Colorado statute provides that all irrigating canals shall be prepared to deliver water to their consumers by April 15, and the period when water may be used extends to November 15, each year.

The third crop of alfalfa and the sugar beet crop require water later in the season than any other crops. Water is seldom required after the second week in September for even these crops. Fall irrigation, preparing ground for the succeeding season's crop, is practiced with good effect in both the South Platte River and Arkansas River Valleys.

From the latest reliable data the writer has prepared the following classifications of irrigated lands within Colorado:

Section	Area, Acres
1. Northern Colorado	916,659
2. Arkansas Valley	466,357
3. San Luis Valley	439,239
4. Grand River Valley	120,000
5. Montrose District	215,000
6. Montezuma District	60,000
7. Durango District	20,000
8. Routt County District	50,000
Total for state	2,317,255

This represents an investment in irrigation enterprises of more than \$50,000,000. Projects now under construction, when completed, will give us fully 3,000,000 acres of irrigated land for Colorado. We have more acres "under the ditch," more miles of irrigating canals, than any other state in the Union. It is estimated that Colorado has more than 6,000,000 acres of irrigable lands.

Probably the Cache La Poudre River has the most remarkable record of any stream in the state furnishing irrigation waters for crop purposes. This river, a tributary of the South Platte,

oroado has more than 600 artesian wells, varying from 400 to 1,000 feet in depth, and the water from these wells is being used to a very great advantage. In the fruit regions of the Grand Valley, many most excellent fruit farms have been made from practically desert land by means of the water wheel, and one section of Weld County is irrigating many scores of farms with pumps quite successfully. The office of irrigation investigations of the Department of Agriculture, Washington, District of Columbia, has a station at Eads, Colorado, where tests are being made of pump irrigation for our state. Important and reliable data will thus be obtained and furnished our farmers upon this important phase of irrigation.

Colorado leads in crop yield and value of staple crops of the field. The following table gives comparative yields of wheat, oats, barley, potatoes and hay in the leading crop states of the Middle West and Colorado. This data was obtained from the Government year book, and covers a ten-year period up to and including crop year 1908:

State	—Wheat—		—Oats—		—Barley—		—Potatoes—		—Hay—	
	Acre Yield Bushels	Acre Yield Value	Tons	Value						
Minnesota	12.6	\$ 9.09	30.3	\$ 9.17	25.80	\$ 10.26	86.0	\$ 35.18	1.64	\$ 9.66
Wisconsin	16.6	12.19	33.4	10.69	28.58	13.95	91.6	37.49	1.56	13.14
Indiana	13.6	10.77	29.1	9.14	25.59	13.07	77.3	42.71	1.35	12.53
Illinois	14.7	11.22	31.3	9.69	27.95	13.51	85.1	49.37	1.33	12.20
Iowa	14.2	9.80	30.0	8.33	26.03	10.36	83.4	37.29	1.52	9.47
Missouri	13.5	9.40	23.17	7.42	21.21	11.14	81.2	43.60	1.28	9.75
Kansas	13.5	8.96	24.44	7.65	18.74	7.37	77.4	49.53	1.42	7.57
Nebraska	16.0	10.53	26.9	7.51	24.37	8.61	85.5	37.59	1.57	7.48
Oklahoma	12.8	8.52	22.3	9.94	26.75	11.25	76.5	64.86	1.33	7.13
Colorado	25.4	18.65	34.2	15.98	33.01	19.12	120.4	71.84	2.31	19.47

is scarcely more than fifty miles long. It has in its drainage basin eighty-five storage reservoirs, by means of which it irrigates 300,000 acres of land and has given the farmers within its territory since irrigation has been practiced, fifty million dollars' worth of products.

Besides river irrigation, Colorado has a considerable area watered by means of water wheels, centrifugal pumps, and artesian wells. This form of irrigation has an important future, and since it gives a perpetual, non-assessable water right, its development will be watched with great interest. One valley in Col-

The weight of oats in all the above-named states seldom is more than thirty-two to thirty-four pounds per bushel, and wheat and barley rarely overrun. Irrigated oats in Colorado often weigh fifty pounds per bushel, and wheat and barley almost invariably overrun two to four pounds.

The average of Colorado includes both the irrigated and non-irrigated crop lands. The yields and values are much higher than this for the irrigated lands alone.

Yields of wheat, fifty, sixty and even seventy bushels per acre; oats, ninety,



SPLENDID BOX EXHIBIT FROM THE ANTLERS-SILT DISTRICT, GARFIELD COUNTY, COLORADO, AT COLORADO NATIONAL APPLE EXPOSITION, DENVER, 1910

Engraved by Clason Map Company, Denver, Colorado

120 and 125 bushels per acre; barley ninety, 125 and 147 bushels per acre are on record. Potatoes yielding 847½ bushels per acre have been obtained by a San Luis Valley farmer at 7,700 feet elevation. The average yield for the state is over 150 bushels per acre, while the net returns to the potato growers of the Uncompahgre Valley, Carbondale District, Greeley District and San Luis Valley is from \$50 to \$250 per acre.

Corn is not grown under irrigation because it is not profitable, since the irrigation farmer desires to average \$40 per acre crop, and forty bushels per acre is all he can depend on with the corn types which he can grow in his altitude in Colorado.

Sugar beets are being grown so successfully that this crop keeps sixteen sugar factories busy to take care of the 1,760,000 tons brought them to convert into sugar. This crop distributes nine millions of dollars this year (1909) to our farmers, and has made Colorado the greatest sugar-producing state in the Union.

The Rocky Ford cantaloupe and the Kleckly Sweet watermelon have advertised Colorado more than any other crop. While they are grown to greatest perfection in the Arkansas Valley, the melon industry is now a crop in the great fruit region of the state where they are planted in the young orchards, giving a productive crop while the farmer is waiting for the trees to reach bearing age. The basis of all crop production under irrigation is the alfalfa crop. This has become so valuable that crop rotations are made to fit into the growing and feeding of this crop.

Alfalfa culture has made Northern Colorado a great feeding district for cattle and lambs, while the field pea has converted the San Luis Valley into a rich feeding district for hogs and lambs.

Probably the fruit districts of the western slope have shown the greatest results from cropping irrigated lands that are recorded.

Here is the home of the Colorado red apple. This apple commands the highest price West or East, and a distin-

guished state senator in Pennsylvania this last season, sent this message to the apple growers of the western slope: "Continue to exercise the same care that has characterized your apple packing up to the present time and the pre-eminence and highest market price of the Colorado apple will ever remain undisputed."

For the season of 1909, Editor Shepard, of "Better Fruit," of Hood River, Oregon, credits Colorado with 800 more cars of apples than the six states of Utah, Idaho, Washington, Oregon, Montana and New Mexico combined.

State	Cars
Utah	400
Idaho	300
Washington	1,740
Oregon	750
Montana	100
New Mexico	200
Total	3,490
Colorado	4,300

The writer, standing in a magnificent forty-five acre orchard on the western slope, so loaded with fruit that 50 per cent of the trees had to be propped up, was told by the owner that this orchard for twelve consecutive years had netted him above all expenses \$250 per acre, per year.

The highest priced land in America is today found in the Grand Valley fruit belt, Colorado, and while this land commands \$2,500 to \$4,000 per acre, many of its 10 to 20-acre fruit farms gave their owners a thousand dollars per acre crop of apples, pears and peaches this year. This pays 25 per cent on the land investment. The berry and tree fruits grow in great perfection on the western and eastern slope of the Rockies, and in the Arkansas Valley from Canon City to Rocky Ford.

We have fruitful fields and cultivated valleys that are not outclassed nor outranked by any section of the whole broad domain of the United States, and our agricultural possibilities, we ourselves are but just beginning to realize.

Because of its growing industries in all lines of trade and traffic, rural and urban property offer unexcelled opportunities for investment. The bringing of at least one million additional acres



BOX OF WOLF RIVER APPLES

Thirty apples to the box

Grown by Arthur Moore, Montrose, Colorado

"under the ditch" within the next five years is not only possible, but probable.

Not only on level areas, apart from the mountain districts, but on the slopes and in the mountain valleys, the irrigation ditch has carried the cultivated crop with most profitable results, from 3,800 feet in lower Arkansas Valley to 9,500 feet altitude in the mountain plateaus.

Irrigated Colorado gives a variety of crop and climate calculated to satisfy the most pessimistic, unexcelled in any other state.

The Colorado farmer has a market largely his own, because of his proximity to the very large and valuable mining camps and growing manufactures.

The agricultural, mining and manufacturing interests are mutually interdependent. Our state is a commonwealth of divers interests indissolubly associated together, and we rejoice in this mingling in trade of miner, manufacturer, capitalist, merchant, ranchman and farmer. Here we find community of interests, reciprocity in trade, each community drawing support from and giving sustenance to the other.



VIEW OF HANSON MESA NEAR THE ENTERPRISING CITY OF HOTCHKISS, ON THE NORTH FORK OF GUNNISON RIVER, COLORADO

# PREPARING LAND AND TREES FOR PLANTING

BY W. PADDOCK AND O. B. WHIPPLE, EXPERIMENT STATION, FORT COLLINS, COLORADO, 1909

**A**N ORCHARD neglected while young will, at its best, be only a second-class orchard. To get the young tree started right is important. The average man justly feels that he must economize in starting the young orchard, and too often economy leads to neglect. Though the process of rearing the trees to a productive age is an expensive one, it is worth doing well. The buying of poor trees, careless preparation of the land for planting, or lack of care after planting, is poor economy. The productive and profitable old orchard is the one grown well while young.

While raw land is not the most satisfactory upon which to set young trees, it often seems advisable to plant on such land without previous cropping. The matter of breaking the land in by some previous method of cropping hardly seems important enough to necessitate the loss of one or two years' growth on the young orchard. With a little additional care the young orchard can be successfully grown on land its first season under water. The soils in our arid countries are dry and require careful watering. If the raw land must

be set, it should be carefully prepared before planting. As a rule, the sandier soils should be thoroughly watered before an attempt is made to level them. Very often the higher spots settle most, and if these knolls are leveled before watering, soil must be moved back after settling is complete. Water should be worked onto these high spots as the first step in the preparation of the land. Often the land is thoroughly watered before it is plowed. When ready for the plow, it should be worked deeply and thoroughly. Some even advocate the use of the subsoil plow in the space to be occupied by the tree rows. This could surely do no harm and may give the roots a better chance to penetrate the subsoil.

The next step is to level the land. The young orchard should never be planted on a poorly leveled piece of land. Leveling after the trees are set is unsatisfactory, and the orchard set on half-leveled land soon shows a lack of uniformity which it requires years to outgrow. Good leveling greatly reduces the labor of watering and the per cent of trees lost in setting.

Land which has been previously farmed or cropped is the most satisfactory upon which to set young trees. If the land has been well watered, it is uniformly moist, will require the minimum amount of water to start the young trees, and all danger from future settling is obviated. However, this land will suffer more quickly from over-watering than will the raw land. The amount of moisture already in the subsoil retards the recovery from over-watering.

There is one precaution to be taken in the preparation of all land for planting to young trees. The earlier it can be done the better. The land plowed in late spring takes water too freely, and the young trees often suffer from over-watering. The upper part of the soil becomes saturated with water, which drives out the air and smothers the roots of the young trees. To avoid this difficulty the land should be prepared early and thoroughly worked down or settled with frequent winter and early spring cultivations. This is especially necessary in case of alfalfa land which is to be planted to young



BEAUTIFUL FRUIT SECTION SURROUNDING PAONIA, COLORADO, ON THE NORTH FORK OF THE GUNNISON RIVER



TWO-YEAR-OLD JONATHANS FROM TIME OF PLANTING. TEN-ACRE TRACT OF W. P. CLOUGH, RIFLE, COLORADO

trees. The disc harrow and smoothing harrow are satisfactory tools for this work.

The framework of the future orchard tree should be entirely formed when the third year's pruning has been given. Too often no attention is given to this important part of tree training, and in other cases the tree is given the proper shape when planted, but here the work is allowed to stop. If we are to have the character of the tree top determined at the third spring, close study and attention, as well as work, must be given the young tree each season.

For those who are unfamiliar with the growing of trees and plants, the basic principle cannot be too often insisted upon—that most trees and plants must be cut back when planted.

Yearling whips of all sorts of orchard trees are the best to plant in Colorado. Such trees usually have no branches. Cut them back to a point twelve to twenty-four inches above where the first branch is wanted. The mere cutting back will induce most of the buds to form branches. If not cut back, usually but a few comparatively weak branches will push out, and these near the top. Many trees die outright where this important feature is neglected. The second year, from three to five branches are selected to form the framework of the tree. All the rest are removed. The selected branches should be properly spaced around the stem so as to form a symmetrical, well-balanced top. One should constantly have in mind the way the tree will appear when full grown. Many may think at first that the distance between the first and last limbs, as given above, is far too great, but when the branches grow to be six and eight inches in diameter the propor-

tion will not appear out of place. In fact, we believe that even a greater distance, say thirty inches, will result in a stronger tree. These framework branches should be pruned back to about fourteen inches. Many side branches will develop on each of these limbs during the second year's growth. The second pruning will consist in selecting two branches on each of the last year's limbs, one near the center of the top and the other at about fourteen inches distance. The main branch is cut off just above the last one selected. The rest of the branches are removed as before. The selected branches are cut back about fourteen inches. The third pruning is mere repetition, selecting two branches on each one of the last year's growth properly spaced and heading them in. If we have started the tree with three limbs, we should now have, after the third pruning, twenty-four scaffold limbs, or, if the start was made with five, there will be forty limbs. This will be enough to satisfy anyone and meets the objection sometimes raised that this system does not provide a sufficient amount of top. In practice it is doubtful if forty limbs will ever be left, but judgment must be used in this respect.

Two-year-old trees have their branches already formed. Unfortunately they are usually close together and too high from the ground. One must either make his selection from the branches as he finds them, or else cut back the entire top and train a sprout from below to form a new top. The training of the scaffold limbs is in all cases practically the same.

Some have found that such pruning during the early life of a tree retards its time of coming into bearing. This need not be so, however. In fact, fruit

may be had just as soon, and fruit spurs may be had more nearly where they are wanted. When a young limb is headed back, most of the buds will start into vigorous growth. If now these side growths are cut back to a single bud, particularly in the summer time, many of them will form fruit buds.

Apple trees have been particularly in mind in the above discussion, but the principles will apply to all fruit trees. Open centered trees have also been discussed, for the reason that they are con-



PEACHES GROWN BY JOHN ASHENFELTER AT MONTROSE, COLORADO

sidered best. If one prefers a tree with a central leader, the training is much the same, except that at the first pruning the uppermost branch is left longer, upon which is developed what amounts to a second top.

There are some very good reasons why it is better to have trees that are intended for spring planting delivered in the fall, the one drawback being the difficulty of keeping the trees over winter. The careless man should not attempt it, but the person who takes pains with his work need not fail.

The trees should be unpacked as soon as possible after they are received, to guard against injury by drying or heating; this will, of course, necessitate heeling in. The bundles should also be cut, for, if left in packages, it is difficult to fill in the earth around all the roots. A somewhat sloping position should be chosen, and the ground should be prepared by plowing deeply, and if too dry, it must be made damp by irrigating or other means. There is little danger of getting the soil too wet when trees are heeled in for a short time in the spring, but too much water must be guarded against in the fall. If the soil is damp enough to work well, it will be just right to keep the trees in excellent condition through the winter.

A trench is now dug of sufficient width to hold the roots of one row of trees and of sufficient depth so that when the trench is filled the roots will be covered



COLISEUM BUILDING, CHICAGO, WHERE THE NATIONAL LAND AND IRRIGATION CONGRESS WAS HELD, NOVEMBER, 1909

with two feet of earth. The trees are placed in the trench, one at a time, with the tops sloping at an acute angle, up the grade. The earth is now filled in, and pains must be taken to see that it sifts in around the roots, leaving no open spaces. The tops are now bent over to the ground and the trunks and tops are covered with at least six inches

of earth. It is now generally considered that one-year-old trees are the best for planting in Colorado, and trees of this age are certainly much more easily protected than the larger, older ones.

One nursery firm in the state has made a practice for several years of taking up all its fruit trees from the nursery rows in the fall and protecting them during



DRYING PRUNES AT MONTROSE, COLORADO, ON THE DENVER AND RIO GRANDE RAILROAD

the winter as above described. Their stock invariably comes out in the spring plump and fresh—quite a contrast to the dried out, worthless stock that too often comes to us from the so-called cold storage cellars.

Care must be taken to see that the covering is not allowed to remain on too long in the spring. Much injury results to most trees if growth has started before they are planted; in the case of sweet cherries this usually results in death. The exact time when the covering may be removed from the tops and trunks will depend upon the locality and upon the season.

In many of the Eastern states, fall planting of both large and small fruits is much in favor. There are several reasons for this preference, the most important being that there is little or no danger of either trees or soil becoming dried out during the winter. Then, in many locations, spring rains prevent early working of the soil, so that it is often late before planting can be begun. But if the planting is done in the fall, some of the plants may become partially established, and, as the wet weather in spring is favorable to growth, the fall planted trees have a great advantage.

Under Colorado conditions quite the reverse is usually true. A few people have success with fall planting, but they are the exception.

Our fall weather is usually very dry, and many of the ditches do not supply late water, consequently fall planted trees usually experience adverse conditions from the start. Then, the following winter weather is equally trying. The prevailing weather is dry, with occasional drying winds. The cold nights, with a rise of temperature of forty degrees or more the following noon, is equally trying to newly planted trees.

In the colder fruit sections many trees are killed by "freezing dry," as



SPLENDID FORTY-ACRE ORCHARD FORMERLY OWNED BY DR. A. E. MILLER AND RECENTLY SOLD BY THE WIRE-BAIRD REALTY COMPANY, DELTA, COLORADO, FOR \$54,000 TO THE FOUR BROTHERS, W. E., W. A., J. E. AND GEORGE WEYRAUCH, OF ANKEY, IOWA

Dr. Miller was the winner of the "Better Fruit" cup for the best five boxes commercial pack of apples at the Colorado National Apple Show, Denver, Colorado, January, 1910. He was recently elected president of the Colorado State Horticultural Society. This society we hope will next year join the Northwest Fruit Growers' Association.

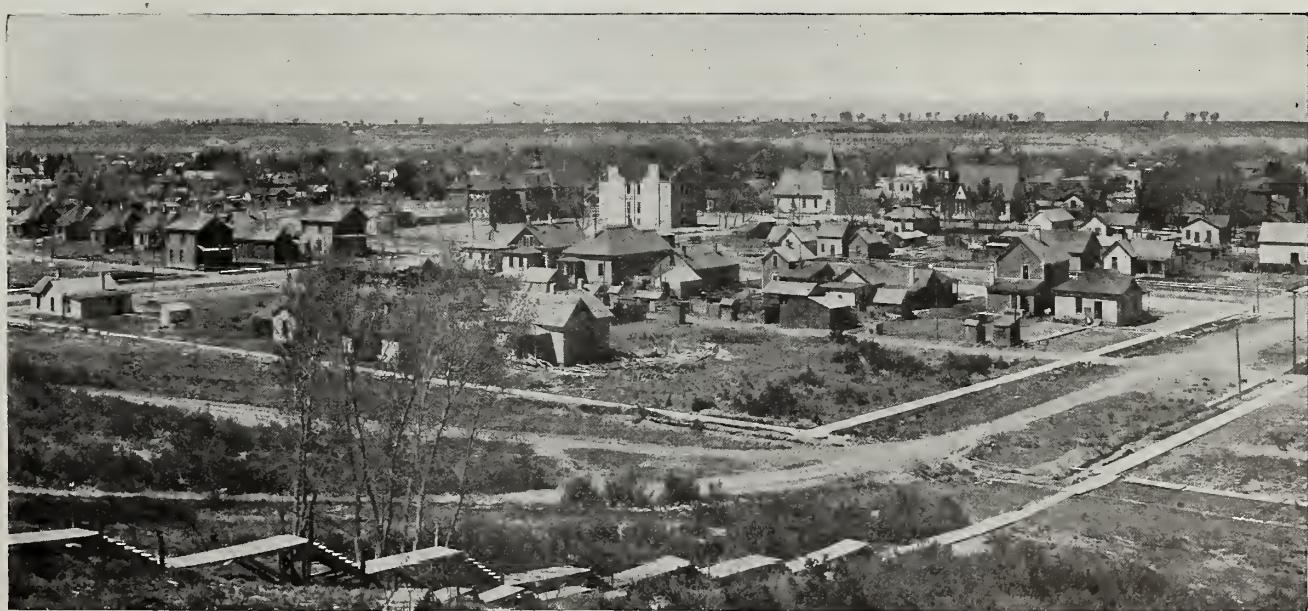
it is termed. This occurs with established trees when the ground freezes to such a depth that root action is practically stopped. Moisture is given off by the tree tops during winter, as well as in summer, though not to such an extent. When the ground is frozen, no water can be taken in by roots and the tops become so dry that many of the plant cells are killed. Such trees may appear all right in the spring and may bloom, and the leaves may grow to nearly the normal size. If the trees reach this stage, they usually die suddenly, seemingly in a day.

Fall planted trees do not have the advantage of an established root sys-

tem to supply the moisture lost by evaporation, consequently they are much more susceptible to injury during the winter. It is not necessary for the ground to become frozen in order to bring about this condition in fall set plants, so freezing dry may occur in any locality.

The above are a few of the reasons why it is not usually profitable to plant in the fall in Colorado.

And the prospective tree planter who is unfamiliar with Colorado conditions will, in this respect at least, find it to his advantage to follow the custom of the most successful orchardists.



DELTA, COLORADO, ON DENVER AND RIO GRANDE RAILROAD

# HOW STRONG MUST WE USE ARSENATE OF LEAD?

BY G. P. WELDON, FIELD ENTOMOLOGIST COLORADO AGRICULTURAL EXPERIMENT STATION

THE question of arsenic injury to fruit trees is one that is engaging the attention of entomologists the country over, and whatever differences of opinion there may be in regard to the amount of injury that has resulted to orchard trees in different parts of the United States from this source, it cannot be denied that soluble arsenic is injurious to vegetation, and if from any cause the supposedly insoluble arsenate of lead becomes soluble in the soil, then the lives of trees that have been heavily sprayed are endangered. The importance, then, of determining the least possible amount of arsenate of lead that will effectively control the codling moth is apparent to all.

Professor A. L. Melander, of the Washington Agricultural College, was probably the first man to demonstrate that as small an amount of a standard brand of arsenate of lead as two pounds to 100 gallons of water, could be used successfully provided that proper spraying methods were observed. Professor C. P. Gillette, of the Colorado Agricultural College, who was among the very first entomologists to use arsenate of lead in spraying for the control of the codling moth, and who is largely responsible for the splendid success that many Colorado orchardists are having in combatting this pest, has always been very conservative in his recommendation of the amount to use, and has seldom, if ever, recommended the use of over from three to four pounds to

100 gallons of water. On the other hand many of the orchardists believed that if a small amount of poison was good, a greater amount would be better, and through such illogical reasoning as this they came to believe that five or six pounds to 100 gallons of water would kill a greater percentage of the worms than would three pounds. Professor Gillette was far-sighted enough to apprehend future trouble if arsenic sprays were inadvertently applied to orchard trees, hence his recommendations for the use of any spray containing arsenic were always made with the thought of possible dangers in view, as well as that of the needless extra expense occasioned by the use of more poison than was absolutely necessary.

The past season was an unusually bad one for codling moth injury in certain localities at least. That fact led the writer to spend much time gathering data in orchards, when the picking of apples was going on, in regard to the strength of arsenate of lead used in the treatment of the trees, the number of times they had been sprayed and the percentage of wormy fruit, as well as many other points bearing on the subject of codling moth control. The seemingly incongruous fact was established that an average percentage of the wormy fruit in those orchards sprayed once, or twice, was less than the average percentage of wormy fruit in those sprayed a greater number of times, and the average percentage of wormy fruit in those orchards



BOX OF GRAND JUNCTION, COLORADO, APPLES

where as low as two and one-half pounds of arsenate of lead were used to 100 gallons of water, was less than in those where higher strengths were used. Observations were made in only one orchard, besides the one used in our own experiment, where as low as two

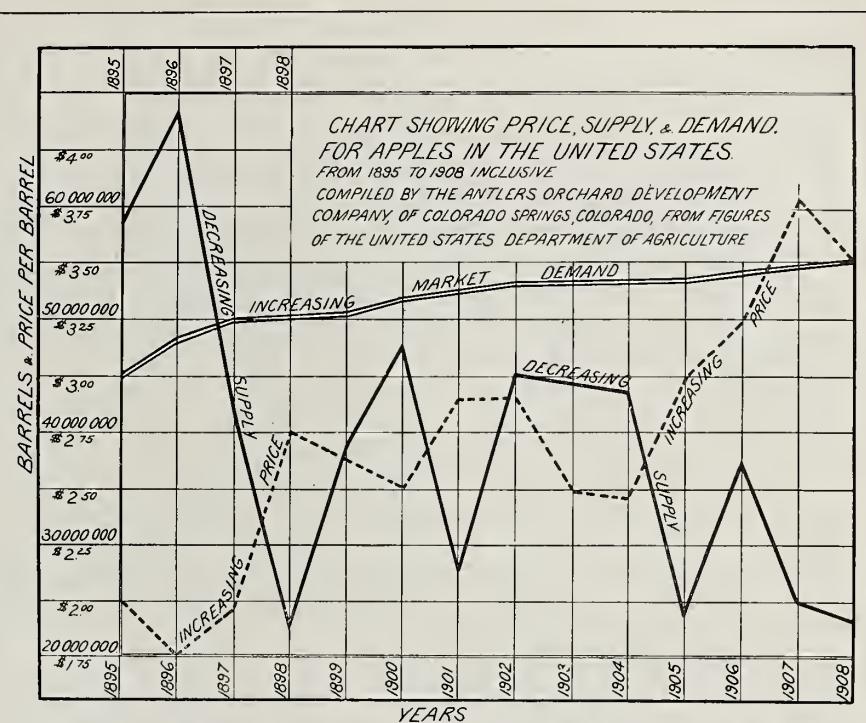


BIRDS-EYE VIEW OF CEDAREDGE AND ADJACENT FRUIT RANCHES

This section is ideally located in the valley of the North Fork of Gunnison River. The railroad will soon be extended into this section

pounds of arsenate of lead were used to 100 gallons of water, for the reason that very few orchardists cared to risk so small an amount. The one orchard showed splendid results from the treatment. The only logical reason that can possibly be assigned for the fact that orchards sprayed with a weak mixture of arsenate of lead contained less worms than those sprayed with a stronger one, and that those sprayed once contained less worms than those sprayed more times, is that the orchardist who depended upon the strength of his spray, and the number of applications to kill the worms, overlooked the more important point of filling thoroughly, every calyx cup at the time of the first spraying, consequently he met with failure, while the man who depended upon thoroughness simply grasped his opportunity, and his efforts at the right time were crowned with success.

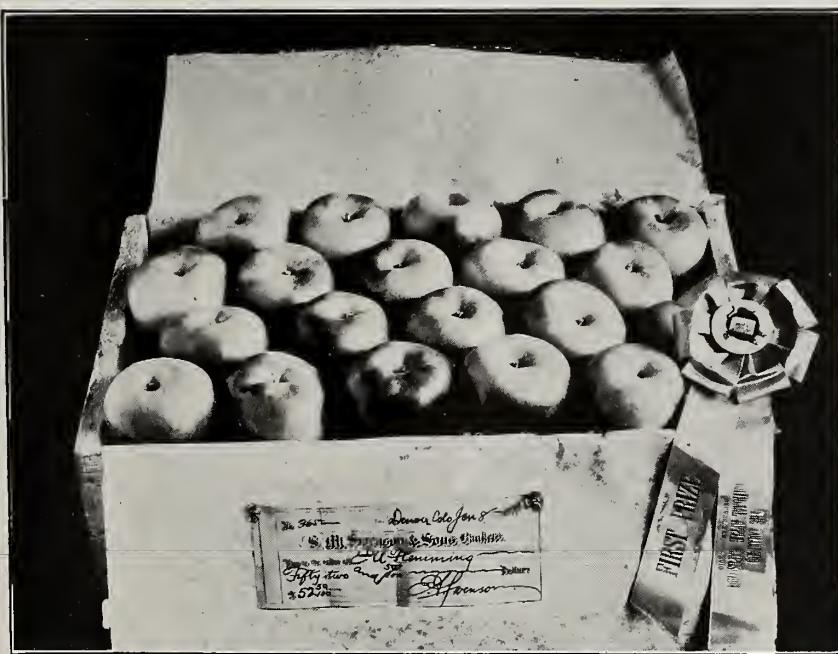
Because of the importance of determining the least possible amount of arsenate of lead that will give good success in controlling codling moth, and in order that we might in Colorado corroborate Professor Melander's findings in Washington, a successful experiment was carried through the past season by the writer. In this experiment three different strengths of arsenate of lead were used, viz: Two pounds, three pounds, and four pounds to 100 gallons of water. Only two brands of arsenate of lead, Swift's and Grasselli's, were applied in the test. All amounts were very accurately weighed with a balance scale. The orchard in which experiment was conducted, that of Mr. J. B.



Explanation: Through any point on any curve a vertical line drawn down shows the year, and a horizontal line drawn to the left shows the number of barrels, or price per barrel, according to the curve in question.

Hart, Eckart, Colorado, contains about fifty acres of miscellaneous varieties, with more of the Ben Davis than any other variety. It was chosen because of the handy size of the trees, a very heavy crop of blossoms, and because it was isolated, thus eliminating the

chances for infestation from other orchards where codling moth might be plentiful. A solid block of Ben Davis trees were chosen for the experiment. Thirteen trees in all were left unsprayed for checks; one hundred and forty-five were sprayed with the aforementioned strengths of arsenate of lead, and many more trees with other insecticides that need not be mentioned in this article. A gasoline power sprayer was used, which gave a pressure of about one hundred and eighty pounds. Spray rods eight feet long were connected to fifty-foot leads of hose, and a medium coarse vermorel type nozzle produced the spray. Trees were not large, about eight years old, and it was possible to spray them thoroughly without using a tower. The remaining trees of the fifty acres of orchard were all sprayed just as thoroughly as were the trees in the experiment, with Swift's arsenate of lead used at the strength of three pounds to 100 gallons of water, and with the exception of the few trees not sprayed at all, and a few more that were sprayed with insecticides that were not effective, the orchard was a remarkably clean one at picking time, as far as codling moth was concerned. The following table gives the results of the tests with different strengths of arsenate of lead. Only three trees were recorded in each experiment. The record includes every apple from each tree, whether picked from the trees or from the ground at picking time. While only three trees were counted, any other three trees that might have been chosen would probably not have varied in the final percentage of wormy fruit over one or two per cent.



BOX OF WINTER BANANA APPLES SENT TO PRESIDENT TAFT FROM THE ANTLERS-SILT DISTRICT, COLORADO

This box of apples was grown by Mr. E. A. Fleming in the Antlers-Silt district of the Grand River Valley, and was bought at auction at the Colorado National Apple Exposition, where it attracted probably more attention than any other box at the show, for the world's record price of \$52.50, by the Antlers Orchard Development Company of Colorado Springs, and was sent with the compliments of this company to President Taft, as a sample of the apples which are grown in this district.

Engraved by Clason Map Company, Denver, Colorado

The most striking thing about the experiment was the number of calyx worms in apples of unsprayed trees. A glance at the table shows that where only two pounds of arsenate of lead were used to 100 gallons of water, the remarkable record of not a single calyx worm was obtained from the three trees whose apples were counted. On comparing this result with that of 864 calyx worms attained from apples of three unsprayed trees of the same variety, and in the same block, the value of the one spray at the time when the calyces were open cannot well be questioned. In the two experiments with three and four pounds of arsenate of lead to 100 gallons of water, only nine calyx worms were found in each case, and again a comparison of sprayed and unsprayed trees gives conclusive evidence of the value of the first spray for codling moth. A point in connection with the calyx spray that deserves special emphasis is this: A calyx cup well filled with arsenic in May is a death-trap for every larva that tries to enter by way of that calyx in September or October. Too often the orchardist fails to get this important point, thinking that the calyx spray can do no good for the second brood of worms. The first brood in this experimental orchard was very small; in fact, up to the time when the second brood came on, serious doubts were entertained as to the suc-

## RECORD OF TWELVE TREES AFTER ONE SPRAYING FOR CODLING MOTH

	Amount Arsenate of Lead to 100 Gallons Water			
	Three Trees 2 pounds	Three Trees 3 pounds	Three Trees 4 pounds	Unsprayed
Number of calyx worms found.....	0	9	9	864
Number of side worms and worm specks.....	108	103	107	386
Number of worm-free apples.....	1,906	2,385	2,468	1,357
Number of wormy apples.....	108	112	116	1,250
Per cent of apples found wormy.....	5.3	4.4	4.4	47.9

cess of the experiment, because of the fact that even the unsprayed trees had only a very few wormy apples. The second brood, however, was large, and the 864 calyx worms from the three unsprayed trees were practically all second brood worms. The total absence, or scarcity of calyx worms in apples of

sprayed trees showed that the spray which was applied to the trees during the month of May killed practically all of the larvae from second brood moths that tried to enter by way of the calyx

at the time when calyx lobes were open was thorough, by examining his apples for calyx worms at picking time. Although no calyx worms at all were found on trees from which apples were counted, which were sprayed with only two pounds of arsenate of lead, while a few were found on those sprayed with three and four pounds, the final percentages would indicate a slight advantage for the higher strengths. The difference of one per cent is, however, so slight that it cannot consistently be considered, and our only conclusion when comparing these percentages with that of the wormy fruit from the check trees, is that all strengths of arsenate of lead used were equally effective. When we consider the fact that in figuring out these percentages all apples marked at all by a worm were con-



PHOTOGRAPH OF ENTOMOLOGISTS PRESENT AT ANNUAL MEETING OF AGRICULTURAL COLLEGE AND EXPERIMENT STATION WORKERS, PORTLAND, OREGON, AUGUST, 1909  
Upper row: 1, Harrison Harman, University of Kentucky; 2, John C. Bridwell, Oregon Agricultural College; 3, E. D. Ball, Utah Experiment Station; 4, Arthur B. Cordley, Oregon Agricultural College; 5, R. W. Doane, Stanford University. Lower row: 6, C. W. Woodworth, University of California; 7, C. P. Gillette, Colorado Agricultural College; 8, A. L. Melander, Washington Agricultural College; 9, W. H. Volek, University of California; 10, C. F. Adams, Arkansas Experiment Station; 11, S. Doten, University of Nevada.

## ORCHARDS NEAR GRAND JUNCTION, COLORADO, ON THE DENVER AND RIO GRANDE RAILROAD



ORCHARDS NEAR GRAND JUNCTION, COLORADO, ON THE DENVER AND RIO GRANDE RAILROAD



VOLUNTEERS FROM THE CITY, AFTER BEING INFORMED BY THE COLORADO TELEPHONE COMPANY OF THE APPROACH OF FROST, RUSHING TO HELP OF FRUIT GROWERS IN LIGHTING THE ORCHARD HEATERS

sidered as wormy, the results attained are very satisfactory and any subsequent sprays for codling moth in that orchard the past season would have been wasted.

Dr. A. E. Miller, of Austin, was one of the few men in Western Colorado who was willing to run the risk of spraying his entire apple orchard of forty acres only once, and with only two pounds of Swift's arsenate of lead to 100 gallons of water. This orchard consists of four varieties of apples: Rome Beauty, White Winter Pearmain, Gano and Jonathan. These varieties blossomed very evenly so that for a time it was feared that the spraying could not be finished before the calyx lobes would be closed on some of the trees. To overcome this difficulty, Dr. Miller used two spray tanks and filled them in the orchard from a 300-gallon water tank provided for that purpose. By taking water from this water tank a 200-gallon spray tank could be filled immediately upon being emptied, in five minutes; consequently very little time was wasted in re-filling, and with three leads of hose, bordeaux nozzles and a pressure of 180 pounds, fifteen tanks of 200 gallons each were applied to trees in one day with one machine. The almost total absence of calyx worms found in this orchard at picking time was proof that the strength of the arsenate of lead was adequate, and that the application was exceedingly thorough.

From the work done we do not yet feel justified in recommending so small an amount of arsenate of lead as two pounds to 100 gallons of water, for the

reason that different brands vary in the actual amount of arsenic that they contain, and carelessness in weighing might result in poor work. However, further experiments in Colorado, it is hoped, will fully justify the use of so small an amount, but until further experiments are recorded three pounds will probably be the least amount recommended. Too much emphasis cannot be placed on the necessity for thoroughness in the application of the spray at the time when the calyces are open, and while there is danger from arsenic injury to trees, this danger is greatly increased by the application of five or six different sprays in a season with arsenate of lead at the strength of six pounds to 100 gallons of water, when one thorough spraying with three pounds might bring the same results.

My observations of the codling moth and its treatment have been such that I believe that no set rule in regard to the number of sprayings necessary in a season to control it can be adduced,

but that all rules that might be laid down are subject to seasonal variations, and may also be rendered void by the proximity of other orchards improperly sprayed or not sprayed at all. While it may be possible in certain seasons and in certain localities to control this pest absolutely with one spray, there may be localities and there may be seasons when two or even three applications of an arsenical spray will be necessary. In no case, however, would the facts attained from observations in orchards justify the recommendation of more than three applications in any one season.



THE average annual demand for apples in the United States is 55,000,000 barrels. The following table shows how the annual crop for the years from 1895 to 1908 has compared with that demand:

1895	59,000,000	1902	46,000,000
1896	68,000,000	1903	45,000,000
1897	42,000,000	1904	44,000,000
1898	32,500,000	1905	24,000,000
1899	38,000,000	1906	35,500,000
1900	47,500,000	1907	25,000,000
1901	27,500,000	1908	24,000,000

TABLE SHOWING COMPARATIVE IRRIGATION STATISTICS BY STATES

States—	Government Projects—			Carey Act Projects—			All Irrigated Lands—		
	No.	Acreage	Total Cost Water Per Acre	No.	Acreage	Total Cost Water Per Acre	Acreage Open to Entry	Total Irrigated Area of State	
Idaho	2	480,000	\$23.50	35	2,272,216	\$39.00	412,445	2,000,000	
Utah	1	50,000	....	2	92,000	45.00	90,000	2,000,000	
Nevada	1	350,000	26.00	1	150,000	26.00	100,000	500,000	
Wyoming	2	100,000	45.00	50	1,000,000	40.00	560,000	3,000,000	
Montana	8	1,063,171	32.50	7	381,000	36.00	619,000	2,000,000	
Oregon	2	90,000	....	19	328,565	30.00	250,000	1,500,000	
Colorado	2	200,000	60.00	3	420,000	40.00	400,000	3,000,000	
Washington	3	144,000	55.00	..	....	55.00	4,000	450,000	
New Mexico	5	220,000	....	1	10,000	60.00	....	400,000	
Totals	26	2,697,171	....	118	4,663,811	....	2,537,445	14,850,000	

# HOW TO CONTROL DESTRUCTIVE SAN JOSE SCALE

BY PROFESSOR A. B. CORDLEY, AGRICULTURAL EXPERIMENT STATION, CORVALLIS, OREGON

THE San Jose Scale is the most destructive of all pests in neglected orchards. Nevertheless, by intelligent effort it can be more easily controlled than any other first class

of the best general "cleaning up" sprays that has yet been devised, we shall, perhaps, be ready to exclaim with J. H. Hale, the veteran peach grower of Connecticut and Georgia, "Blessed be the San Jose Scale." It has compelled us to spray with the lime, sulphur and salt.

One application of lime, sulphur, salt each winter will do more for the neglected orchard than can be done in any other way by the same expenditure of cash and energy. It not only destroys San Jose scale, but it also destroys the branch form of wooly aphis, the eggs of the green aphis, the pear leaf blister mite, the hibernating larvae of the prune twig-miner, probably the hibernating larvae of the bud-moth, together with most other insects which may chance to be wintering upon the trees. It is also a good fungicide. If applied in early winter it is nearly or quite equal to bordeaux for the second application for apple tree anthracnose; applied to peach trees just before the buds open in spring it is a preventative of peach leaf curl; and applied to apple trees under similar conditions it is a satisfactory substitute for the application of bordeaux, which is usually recommended for that time.

With all its good qualities, however, the lime, sulphur, salt spray is not a cure-all. It does not, so far as known, reduce the number of wormy apples in an orchard, nor can it be used as a substitute for bordeaux while the trees are in foliage. It is a distinctly winter spray and should be used even in winter only upon deciduous trees.

The San Jose scale is very largely responsible for the present enthusiastic crusade against the old, neglected, moss-covered orchards. Everyone is pruning and spraying. Why? To destroy the



"CENTRAL" OF THE COLORADO TELEPHONE COMPANY INFORMING GROWERS OF THE APPROACH OF FROST

San Jose scale. Yet I find that a very small percentage of our farmers know what this dreadful thing is which they are so earnestly endeavoring to destroy. If any other spray than the lime, sulphur and salt were being used, a reaction against all spraying would certainly follow the poor results of so much misdirected energy. By using the lime, sulphur and salt spray, however, beneficial results are quite certain to follow, whether the scale be present or not. Nevertheless, everyone who grows trees or shrubs should learn to know this destructive little pest and be prepared to combat it, since it may at any time appear upon the ornamentals of the city lot as well as the trees of the old home orchard.

Dr. L. O. Howard records it upon the following plants:

Apple, cherry, pear, peach, plum, persimmon, Rocky mountain dwarf cherry, quince, flowering quince, currant, grape, flowering currant, black currant, gooseberry, raspberry and strawberry, and



FRUIT GROWER BEING INFORMED BY "CENTRAL" OF THE APPROACH OF FROST AND HURRYING TO LIGHT HIS SMUDGING POTS

orchard pest; and when we come to realize that the one annual winter application of the lime, sulphur, salt spray, which is all that is necessary to reduce its ravages to the minimum, is also one



WEATHER FORECASTER OF THE UNITED STATES DEPARTMENT OF AGRICULTURE WARNING CENTRAL OF THE COLORADO TELEPHONE COMPANY OF THE APPROACH OF FROST

among nut plants, on the chestnut, almond, pecan, black walnut, English walnut and Japan walnut. Among the ornamental plants and forest and shade trees found to harbor the scale were the rose, hawthorn, coton-easter, euonymus, spirea, linden, English huckleberry, elm, osage orange, acacia, alder, sumac, laurel, weeping willow, red dogwood, juneberry, golden willow, English willow, laurel-leaved willow, milkweed, catalpa speciosa, Lombardy poplar, Carolina poplar, cut-leaved birch, mountain ash, silver-leaved poplar, golden-leaved poplar, citrus trifoliata, Japanese quince, actinidia, snowball, loquat, akebia.

Perhaps the worst feature of an attack by San Jose scale is that, owing to its small size and inconspicuous color, it often remains unnoticed until the tree has been seriously injured or even killed. That the tree lacks vigor may be recognized, but the cause of its unthriftiness is overlooked. Yet it is not difficult to detect when one really looks for it. In the early stages of infestation a few scales may be found, usually clustered about the buds of the preceding season's growth, or even on two-year-old wood. The mature scales are grayish in color, being usually but not always somewhat lighter than the bark to which they are so closely attached. The immature, half-grown scales which may be found with the mature ones, are at the present time somewhat darker in color.

The mature females are nearly circular in shape, are approximately one-sixteenth inch in diameter and each is somewhat raised in the center to form a slight protuberance or nipple which is lighter in color than the rest of the scale. If this scale is carefully examined by means of a small magnifier several concentric circles may be observed between the nipple and the outside edge; and if it be carefully raised with the point of a pin or a



SPRAYING IN DR. MILLER'S ORCHARD ON SURFACE CREEK MESA, AUSTIN, DELTA COUNTY COLORADO

Read article by G. P. Weldon in this issue

knife there will be revealed a minute, bright yellow object, the insect itself.

On badly infested plants the young scales settle wherever there is room to insert a beak into the bark, and as they increase in size they become much crowded and overlapped, and have the appearance of a gray, scurvy deposit on the bark. The natural color of the bark is obscured, and the infested plant appears as though coated with fine, ash-colored bran. If the thumb nail or other object is rubbed over this scurfy covering, thereby crushing the insects beneath the scales, a moist or oily appearance is produced and numerous scales will be overturned and many of the little, yellow insects be revealed.

During the early stages of an attack very few, if any, of the scales will settle upon the leaves or fruit. Later both may be attacked. Upon the leaves, especially of the prune and peach, the young scales may be found on both surfaces, and more particularly clustered along the midrib. Each scale produces a minute purple spot. Upon purple prunes, red apples,

etc., the scales appear only as minute gray specks, usually clustered about the cavities at either end, but upon the yellow fruits like pears, peaches, and the yellow plums and apples, each scale produces a bright, reddish discoloration. If badly infested, the fruit, particularly of pears and apples, become much pitted, distorted in shape, cracked and unmarketable.

For the benefit of fruit inspectors in particular, it should be noted that reddish discolorations upon yellow fruits are not always caused by San Jose scale. Upon yellow apples and particularly upon peaches very similar spots are produced by attacks of certain minute fungi. Hence, such spots should not in themselves be taken as proof of infestation by the scale. This can be determined definitely only by a careful examination and the actual detection of the scale. The presence of such blotches may well arouse suspicion of the presence of San Jose scale and should challenge a careful examination alike by growers, buyers and inspector; so also should the presence of dead and shriveled leaves upon the trees in midwinter invite examination; for although their presence is not proof of the presence of the scale, it is evidence that the vitality of the tree has been seriously impaired from some cause, and in regions where San Jose scale is prevalent that cause in a vast majority of instances is the scale.

On the approach of winter scales of various sizes and ages can be found on infested trees. A very large pro-



G. H. WEBB'S BERRY PATCH AT CEDAREDGE, COLORADO. FROM ONE AND A QUARTER ACRES WERE SHIPPED 254 CRATES OF BERRIES, WHICH BROUGHT \$464

portion, especially of immature scales, usually perish during the winter. The male scales are not circular but somewhat elongate. If one removes one of the large, circular scales the little, yellow object thereby revealed is a mature female. Under a moderate power of the microscope she proves to be a nearly circular, yellow, sack-like body with long, slender, bristle-like mouth parts. An examination of the male shows him to be more elongate and to possess the rudiments of legs, wings, eyes, antennae, etc. The females live and die beneath their scales—never leaving them; but in April the males molt for the last time and soon thereafter emerge from under their scales as minute, active creatures with fully developed wings. After mating the males die.

In May, possibly earlier under favorable conditions, the females begin to give birth to living young and may continue to produce for six weeks or longer. The young are minute, little orange-yellow, active creatures with eyes, bristle-like mouth parts, two antennae or feelers,

slowly worked through the outer bark into the living tissues beneath, from which it draws its sustenance. At any time during the summer season hundreds of these little pests may be seen, even with the unaided eye, as they crawl about over the bark or fruit of infested trees. Even before the young insect has attached itself to the bark the secretion of the scale has begun. At first it consists only of a fluffy white mass of fine, waxy threads,

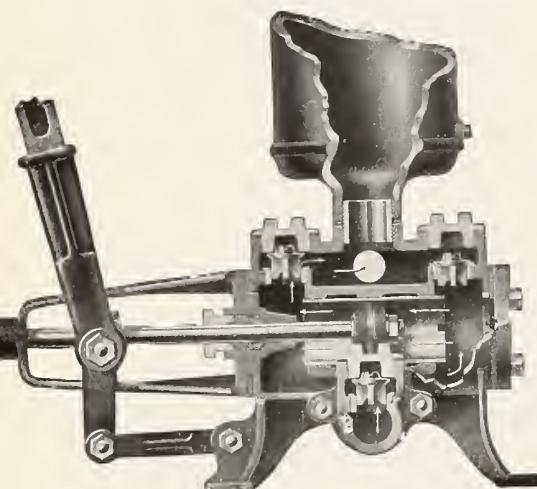
which for the first day or so of its existence causes the young San Jose scale to appear as a minute, downy white speck upon the bark. As these filaments become more abundant they become fused into a more and more compact scale and assume a yellowish color. Later, the young scale-insect molts several times during its growth and the fully developed scale is thus made up of fused wax filaments and the several molted skins.

Each female of the over-wintering generation is capable, under favorable conditions, of producing approximately one hundred young. In the course of but one month these reach maturity and the females begin to produce another generation. There are thus produced some four or five generations during the entire season. Under supposedly favorable conditions single females of the later generations have been observed to produce approximately six hundred young. Basing their estimates upon breeding cage observations, Dr. Howard and Mr. Pergande have shown that it would be possible under the most favorable conditions for the progeny of a single female to reach the astonishing number of 3,216,080,400 individuals in a single season. Should each of these scales reach the largest size, one-tenth of an inch, and were they all placed side by side touching each other in all directions there would be enough of them to cover approximately five acres of surface. It

is almost needless to add that in the intense struggle for existence of organism with organism and with climatic conditions, such an astonishing rate of multiplication is not even approximated under natural conditions. Nevertheless, when one realizes the enormous rapidity with which this pest multiplies it is no longer a surprise that careless work in spraying fails to give satisfactory results. A few females here and there upon very small portions of the tree which have not been reached by the spray may, during a single season, completely re-infest that tree. Satisfactory results are obtained only by the most thorough work. Every square inch of surface of trunk, limbs, branches and twigs should be thoroughly covered. By far the most common cause of unsatisfactory results is the failure of those who spray to do thorough work.

Since the female scale is motionless, and permanently attached throughout life to the branch on which it feeds, it is often asked how it is that the San Jose scale can spread from tree to tree, orchard to orchard, and even for larger distances? It is only during the first few hours of its existence that one of these little pests can emigrate, and observation has shown that even then it is incapable by its own efforts of getting more than a few feet at most from the tree on which it was born. But birds and bees and other insects make good airships for the little creatures, and

no doubt many a young scale has crawled upon the foot of a bird or upon some larger insect and thereon voyaged to the distant realm of another tree or orchard. No doubt also strong gusts of wind often tear them loose from the bark on which they are crawling and waft them to the branches of neighboring trees. These are provisions of nature for distributing the species. Through the channels of trade they are carried long distances, even from continent to continent, upon infested nursery stock, cuttings, etc., and probably to a lesser extent upon infested fruit. Buds and scions carelessly taken from an infested



SECTIONAL VIEW OF GOULD'S ADMIRAL  
Portland Seed Company, Portland, Oregon

and six legs. After emerging from under the protecting scale of the parent each wanders over the surface of bark, fruit or leaf until a suitable situation is found, when the legs and antennae are folded beneath the body, the bristle-like beak is

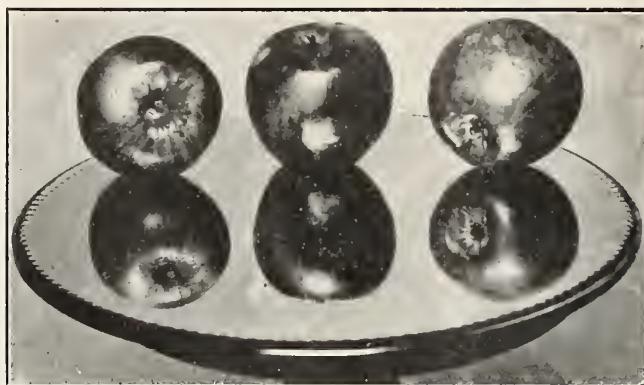
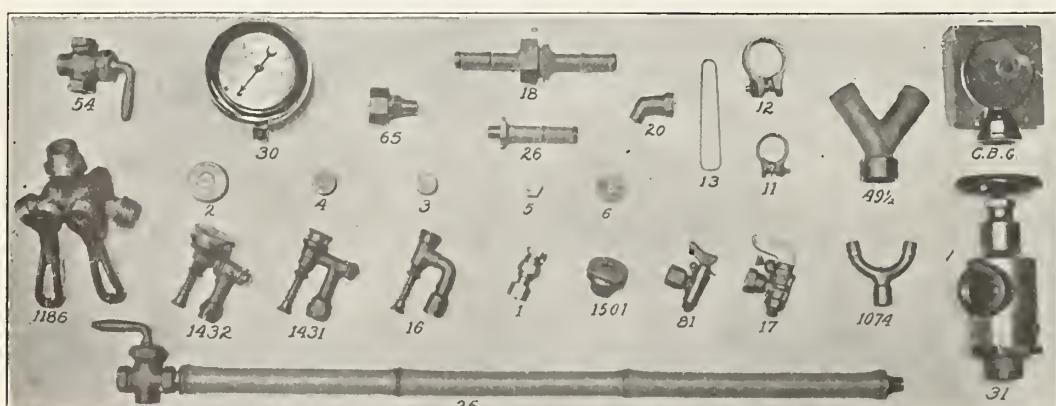


PLATE OF APPLES GROWN AT DELTA, COLORADO

Courtesy of Business Men's Association



NOZZLES, CONNECTIONS AND HOSE SUPPLIES

54, Stop cock; 30, Pressure gauge; 65, Hose reducer; 18, Hose coupling; 26, Hose connections; 20, Nozzle; 13, Caldwell bands; 11-12, Brass Yordan bands; 49 $\frac{1}{2}$ , Brass Y; 1186, Double cut-off; 2, 3, 4, 5, 6, Hose washers; 1432, Large Mistry nozzle; 1431, Mistry nozzle; 16, Vermorel nozzle; 1, Bean Best nozzle; 1501, Mistry Jr. nozzle; 81, Seneca nozzle; 17, Bordeaux nozzle; 1074, Brass Y; 31, Relief valve; 25, Bamboo extension

tree may transmit the pest to the orchard in which they are placed or may infest an entire block of trees in some nursery, and thence be distributed to many orchards. It is also probable that many are carried about upon the hands and clothing of the men who prune the trees or pick the fruit or otherwise work about the orchards. By such means has the scale been brought from China, its native home, to San Jose, California, whence in thirty-five years it has spread to practically all the fruit-growing states in the Union and to various foreign countries.

There is but one remedy yet discovered which need be considered in this state. That is the lime, sulphur and salt spray. In the East, fairly satisfactory results have been obtained by the use of various preparations of kerosene or other petroleum products, but the high price of kerosene makes it impracticable to use it here in any form for spraying purposes, except in a very small way. The San Jose scale has probably been present in this state approximately twenty-five years; and for the past fifteen years the lime, sulphur and salt has been the standard spray for destroying it. During the first few years of its use various formulas were employed and to

In preparing this spray it is my plan to put a little water in the bottom of the boiling vat, start the fire, and when the water comes to a boil pour in the required amount of lime and sulphur. The hot water, together with the heat generated by the slaking lime, will at once set the mass to boiling briskly. This should be kept up for at least an hour, or until the mixture is of a deep blood-red color, and there is but little free sulphur floating upon the surface. The salt can be added at any time since it dissolves readily.

Use a "hog-scalding" vat made of inch and a half lumber, and with galvanized iron bottom—eighteen inches wide on the bottom, twenty inches wide on the top and ten feet long. The sides should project two or three inches beyond the ends and the galvanized iron of which the bottom is made should project at each end six inches beyond the sides and then be turned up and fastened securely, thus forming shallow troughs at each end, which must be kept filled with water to prevent the ends from burning.

These vats may readily be set up wherever there is a convenient water supply by simply digging a trench of the proper dimensions, placing the vat over it and banking about with earth to prevent the fire from reaching the wooden sides. A better draft is secured by erecting a few feet of stove pipe at the back end. If the vat is to be permanently located, it is of course preferable to mount it upon a brick arch. With such an apparatus one can readily prepare the spray as fast as it

can be used by a power spraying outfit running two lines of hose. If one possesses a steam boiler the spray can be most conveniently boiled in a number of barrels or in large wooden vats, the steam being conveyed to the bottom of the barrels or vats. Thus liberated, it not only boils the spray, but keeps it well stirred the while, thus eliminating much of the drudgery of stirring by hand which is incident to other methods.

At present I can offer no encouragement to those who desire to see the San Jose scale held in check by its natural enemies. In the month of August, 1903, I received, through the courtesy of Dr. L. O. Howard, a small consignment of the Chinese ladybird beetle (*Chilocorus similis*). These were liberated at Jacksonville, in Southern Oregon, in an abandoned pear thicket on the premises of Mayor E. Britt. This old thicket was badly infested with the scale, and Mr. Britt undertook to see that it should not be sprayed or

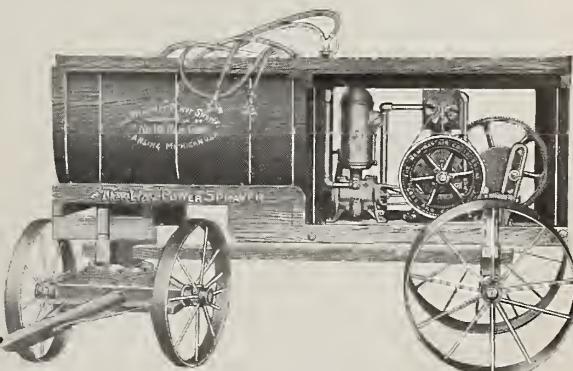


WALLACE PEERLESS "LOW-DOWN" POWER SPRAYER  
Built by American Sprayer Co., Minneapolis, Minnesota

destroyed during the time the experiment was being tried, and strong hopes were entertained that the extremely favorable conditions would result in a flourishing colony from which beetles could later be distributed to other parts of the state. Several months after the beetles were liberated Mr. Britt and Mr. Charles Meserve succeeded in finding more than twenty of them still alive and apparently in good condition, but by the following July all had apparently perished, as a most thorough search by Mr. Meserve and myself failed to reveal any trace of them or their progeny, and similar negative results were obtained from another examination the following year.

A closely related native species, *Chilocorus bivulnerus*, has been reported by Mr. A. H. Carson, horticultural commissioner for the third district, to have practically exterminated the San Jose scale from a small but badly infested orchard near Grants Pass. The late Emile Schanno, The Dalles, Oregon, in 1896, sent me a number of specimens of this species, with the report that they were very abundant upon the fir trees, which were found to be infested with a closely related scale, *Aspidiotus abietis*; but no other reports of such habits have been received, and I myself have never observed them.

The much smaller, entirely black, native species, *Pentilia misella*, is much more generally distributed and undoubtedly destroys a great many scales, but for some reason it does not increase rapidly enough to keep pace with the increase of the scale, which appears, likewise, to be true of the three or four internal parasites which have been reared from San Jose scale from various parts of the country.



THE NEW WAY SPRAYER  
John Deere Plow Company, Portland, Oregon



a less extent this is still true, but since December, 1896, when it was first published in the biennial report of the State Board of Horticulture, the formula which has come to be known as the Oregon formula has been the standard one in this state.

This formula was the result of some extensive experiments by the late Emile Schanno of The Dalles, Oregon, and is as follows: Quicklime, 50 pounds; sulphur, 50 pounds; salt, 50 pounds; water, 150 gallons.

This may be much simplified by designating it as the 1-1-1-3 formula; i. e., one pound of lime, one pound of sulphur and one pound of salt to each three gallons of water. West of the Cascades this formula is more efficient than the 1-1-4 formula which is reported to be satisfactory in the Inland Empire. The function of the salt being problematical, I have in the last edition of my bulletin on insecticides and fungicides (No. 75) advised using twenty-five to fifty pounds of salt rather than the full fifty pounds which was originally recommended. I can not, however, recommend that the salt be left out entirely, as is evident from the results of two seasons' experiments which are herein recorded.

## ARSENICAL SPRAYS—WHY SOME HAVE SICK TREES

BY WM. P. HEADDEN, A. M., PH.D., FORT COLLINS, COLORADO

**I**N BULLETIN 131 of the Colorado Experiment Station, which was published in full in "Better Fruit," I endeavored to set forth some of the dangers following spraying which have, as I firmly believe, already overtaken us. In presenting that bulletin I had no desire to frighten anyone to such an extent as to make him feel that he was justified in declaring that the practice of spraying is under all conditions fraught with so great danger that it cannot be justified. This is a phase of the matter

which was not discussed at all; in fact, that bulletin was intended to set forth some of the salient results produced as I had found them, and nothing more.

The facts are simple and no one has any just reason to be unduly alarmed because the results of an irrational practice has been plainly set forth, without exaggeration of any of the evils, and without any effort to make the observed facts fit any theory.

It may be well to state some facts which, in a measure, still obtain, but not

to the same extent as formerly. In the past, many persons sprayed four, five and as many as nine times in a single season. This was and is a bad practice. Again, we have used successively paris green, arsenite of lime and arsenate of lead. The lead has been used principally during the past six years; before that the arsenite of lime was used and it is in the use of this that we find that the orchardists were most unwise. The arsenite of soda directed to be used was one gallon to the tank. The tendency was to add more—one man for instance has told me that he used five quarts to the tank instead of a gallon—at each spraying; he added one quarter more arsenic that he had been directed. Another man told me the same thing, and still another, using arsenate of lead, stated that he used sixteen pounds to the tank, 200 gallons, and sprayed nine times. While the orchardists of Colorado have never been advised to spray more than three times a year so far as I know, it is still a common thing for them to spray from four to six times, and the men who spray the greatest number of times use, as a rule, the largest quantities of spray material. This, too, is bad. The general feeling of the orchardist is that he should not be too sparing with the arsenic or he may lose the whole of his labor and material. Four pounds of pasty lead arsenate seems to the average man a small quantity to add to 200 gallons of water. Further, he does not consider that all that he puts on the trees finally lodges in the soil; a very small amount may annually be carried away on the outside of the fruit, but practically all that is put on the tree finds its way into the soil. Once in the soil, it remains there a long time, and each year the orchardist adds more to that which is already present. This is one of the things which we tried to show plainly in the bulletin mentioned. As an illustration, we will take the extreme case, sixteen pounds of lead arsenate to the tank, 200 gallons. The trees are of fair size and the owner used about ten gallons of the spray to a tree. He sprayed nine times, or added ninety gallons of the spray to each tree—7.2 pounds of pasty lead arsenate. If the pasty lead arsenate was one-half water he added thirty-six pounds of dry lead arsenate, containing close to one pound of arsenic acid (0.972 pounds). This is adding arsenic acid to the soil at a rate of eighty pounds per acre each year, assuming eighty trees to the acre. An orchard, if it were regularly sprayed in this manner, would receive as much arsenic in nine years as we now know would suffice for more than 300 hundred years. We are sure that this is not good. A large number of trees are affected by a disease which competent horticulturists have not been able to satisfactorily explain. They could not find any cause for the trouble. I expressed the conviction six or seven years ago that there was danger from

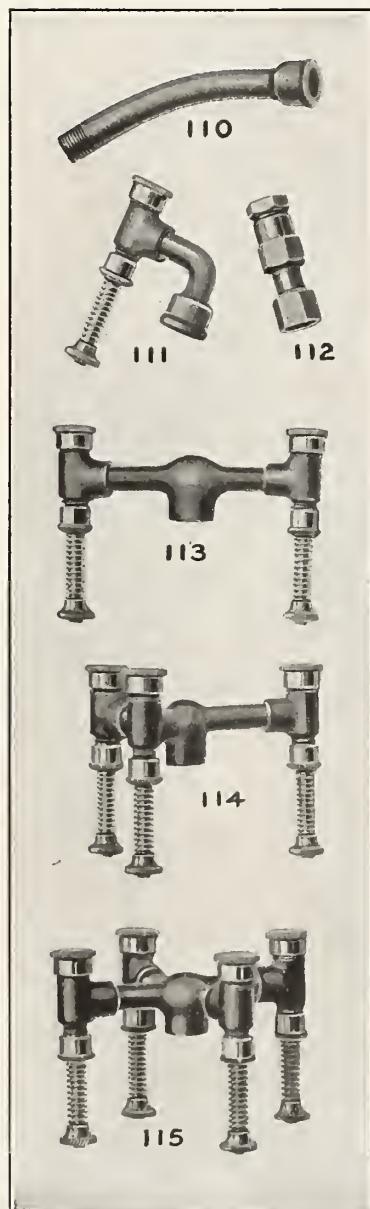


Figure 110 shows a bent piece of brass threaded so one end fits the end of the bamboo spray rod, the other end the nozzle. Its object is to give a greater angle to the spray when desired. Figure 112 is a Cyclone nozzle, a variety of the Vermorel type, while Figures 111 to 115 show the different combinations used of the Vermorel nozzle. Vermorel nozzles deliver a very fine, misty spray, but do not use a large quantity of liquid.

Figures 117 to 119 show the different forms of the Bordeaux nozzle, one of the most widely used nozzles. It delivers a coarse and penetrating spray, but does not cover as large an area as some other types. The Vapo nozzle shown in Figures 120 and 121 occupies a position between the Vermorel type and the Bordeaux, throwing a coarser spray and to a greater distance than the Vermorel, but less than the Bordeaux. It covers a larger area, however, than either. The internal construction of the Vapo is shown in Figures 122 and 123. The Y connection shown in

Figure 116 is used when two nozzles are used at the end of one rod.

this constant application of arsenic to the trees and with them, to the soil.

Two important questions arise in this connection. One question is what is the effect of arsenic on the tree if the tree should be able to take it up; another one is, can it be converted into such form that the tree can take it up after it gets into the soil?

We will take up these two principal questions in the reverse order. The materials used for spraying have been paris green, lime, sal soda and arsenic, and the arsenate of lead. These all owe their use to the presence of arsenic, which, when eaten by the codling moth larva, for instance, is brought into solution and poisons it. But while these spray materials are capable of being brought into solution by the digestive fluids of the larva stomach, they are looked upon as insoluble in water and were supposed to be without action on the tree.

As paris green often contains free arsenious acid, enough sometimes to burn the leaves, it was suggested that we should add milk of lime in sufficient quantity to prevent this burning, which it did; but we found by treating paris green in this manner and washing it with water that a very notable quantity of arsenic would go into solution, especially when the amount of unused milk of lime was small, or if it had all been used up. We concluded that in using paris green mixed with milk of lime as an insoluble compound we have been making a mistake. Now, these statements are based on experiments made with water and not with soils, but water may be said to be necessary for all the changes which take place in the soil, and while its action may be modified, sometimes very greatly, indeed, still the same thing is likely to happen in the soil.

When we use the lime, sal soda and arsenic we have the same thing as before; i. e., if the arsenite of lime, which is the form in which the worm eats the arsenic, be suspended in pure water we find it quite soluble, altogether too soluble to be safe. I took a small quantity of arsenite of lime without any milk of lime present, and suspended it in a large quantity of water, when it practically all went into solution and could in this form be easily taken up by the tree.

Now, about the arsenate of lead: This is certainly the best one of the three forms of arsenic used up to the present time, but this is not so insoluble as one could wish that it were. Carefully conducted experiments have given us some strange results, but the main point is that arsenic is present in water which stands in contact with arsenate of lead.

So far we have considered water only—what about our soils. The soils in countries of abundant rainfall are well washed out, so that the water held in the soil is more or less nearly pure water. On the contrary, the soils in countries of scanty rainfall are not washed out, and when they are wet the water contained in them holds a number of things in solution. The common one so held in solution in the soils of the

semi-arid countries are glaubers salt, or sulphate of soda—ordinary kitchen salt; or sodic chlorid, sometimes sal soda or carbonate of soda; also epsom salts, magnesic sulphate, gypsum or calcic sulphate, and sometimes still others. These are usually spoken of collectively under the name of "alkalis."

In the soil of the humid regions we will have comparatively pure water acting on these spray materials in the soil; in our semi-arid regions we will have waters comparatively rich in these alkalies acting on them. For these reasons

we have tried to find out what the effect is when these salts are added to the water. We used Glauber's salt and ordinary kitchen salt, because these are usually the principal salts making up our alkalies and are very widely distributed. It appeared that they increased the amount of arsenic that went into solution. We were met at every point of our work with this fact, i. e., that these arsenical compounds are really a great way from being insoluble.

Now, it is proper to ask what about the soils which have been sprinkled year

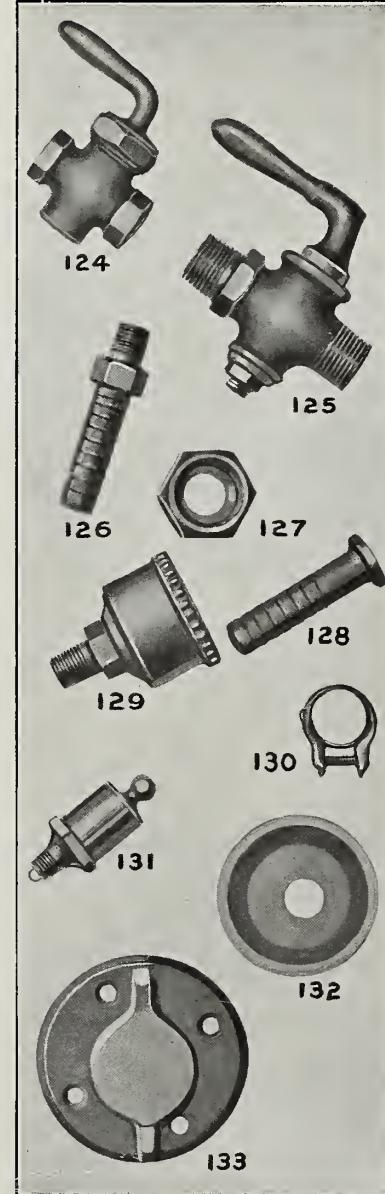


Figure 133 is an emptying flange which is fastened upon the bottom of the tank on power sprayers for removal of the liquid when desired. Figure 132 shows a rubber drip guard used upon the bamboo rod to prevent the spray running down the rod upon the hands of the operator. Being of rubber, it may be moved from joint to joint of the bamboo rod. Figures 129 and 131 show different styles of oil cups used on power pumps. Figures 126 and 128 are brass hose ends used on all hose for spraying. They are capable of sustaining a higher pressure without blowing out than ordinary hose ends. They are further reinforced by the use of one or more hose bands as shown in Figure 130. The stopcock shown in Figure 125 is used to connect the hose with the iron discharge pipe, while Figure 124 shows the leakless stopcock which connects the hose with the spraying rod. It is part of the equipment of every orchardist.

Figures 134 and 141 show two styles of suction strainers, which are placed on the end of the suction hose so as to strain the spray before it goes to the pump. Figure 141, on account of its being nearer the bottom, is much preferred. The other illustrations are of various bushings, etc., in common use among spray pump manufacturers.

after year with these arsenical compounds. Will you get arsenic out of them by extracting them with cold water such as you irrigate with, or such as falls as rain water. Perhaps the soil itself will make some difference in this respect. We have tried this, too, and they all, without exception so far as we have tested them, yield arsenic to pure water. No one is to understand that all of the arsenic is soluble in water at one time, but that some of it is soluble enough to be easily detected in a few ounces of the soil. Of some soils we might have to take more than of some other soils; in other words, this will vary in different soils. I have said too much about this subject, but it is an important fact that our soils contain arsenic which is soluble in water, though there may be both lime and iron salts present.

There have not been many experiments made on ten, twelve or sixteen-year-old apple trees to determine the effects of soluble arsenical compounds on them; at least not intentionally, but we have quite a number furnished us by accident.

We have tried soluble arsenical salts on greenhouse plants and they killed them, some of them very quickly, and accident has furnished us a variety of cases. I know of a number of apple trees, and have been informed of pear trees, peach trees, a cottonwood and a willow which have by accident had sodic arsenite placed within the feeding area of their roots. The results have been very interesting and uniform in all the cases that I have seen. If the arsenic has been spilled, buried or intentionally poured on the soil within the feeding area of a root, it can be followed through this root into the trunk, limbs and small branches of the tree. In such cases the effects of the arsenic may be confined to a narrow strip of the trunk and may confine itself to a single limb, or it may spread to two limbs, while the rest of the tree may not be affected. On the other hand, if the quantity of arsenic spilled or buried has been large, the whole tree is apt to die. I have seen this effect also produced by lead arsenate. The average person does not have any idea of the large area of ground

occupied by the roots of an ordinary-sized apple tree. Roots of trees set 32x32 feet will occupy the whole of the ground and arsenical preparations, especially soluble ones, disposed of by burying them in the center of the block has, to my knowledge, killed several trees. I have traced apple tree roots to a distance of twenty-five feet, and they were not large roots as one might suppose, but on the contrary, were quite small.

The effects of the arsenic on these trees as already stated, has been of such a character that it was easily traced by its destroying the bark, killing and staining the wood. At least the woody tissues when not entirely destroyed have a brown color. The bark of the roots is so completely destroyed that there is no fibrous character remaining in it. In bad cases the wood appears as though charred, and on rasping lacks fibre, too. In these cases the arsenic is taken up by the roots in rather large quantities, because there is a big supply of it within the reach of the roots. If the supply is small some arsenic may be taken up, but not enough to produce, in a short time, the results observed in cases where sodic arsenite is poured on the ground or buried, as the case may be, but if the soil contains soluble arsenic it will be taken up and pass into all parts of the tree, even into the leaves and fruit. We have already seen that an excessive amount of arsenic taken up in this manner will produce death, but a smaller quantity—one not sufficient to produce death—may produce an unhealthy condition of the tree. I believe that there are very many trees suffering from this cause. All sick trees, however, are by no means necessarily suffering from systemic arsenical poisoning. There are other causes which produce unhealthy trees, but I am convinced that there are many more trees suffering from this cause than any one has yet even guessed.

We do not wish any reader to think that arsenic is the only cause of sick trees, nor do we wish him to think that it must be taken up by the feeding roots in order to do damage to the trees. The systemic poisoning, except in rare cases, proceeds so slowly that we may not detect it for a long while, but if the

arsenic becomes so plentiful in the ground, especially at the base of the tree, as to form, as it were, a plaster about the crown of the roots, it will attack the tree locally, destroying the bark of the crown and adjacent roots. This is what has happened in a great many cases and has already killed many trees, especially in orchards from fourteen to eighteen years old. It seems that trees which had reached a fair age, say fifteen years old, before they were sprayed, withstand the corrosive action of the arsenic better than trees which are only seven or eight years old when first sprayed. I know an orchard twenty-six to twenty-nine years old and I do not think that a single one of these old trees has a bad crown, but some younger trees, trees which have been set in to take the place of others, show the effects of arsenic; not all of them, but some of them.

As in the former case people furnished us some excellent experiments, so, too, we have a few in this case. Bands, heavy ones, were left on the trees and the trees heavily sprayed with lime, sal soda and arsenic, which collected under the bands and remained there throughout the season and longer. The result was that the bark was destroyed on some of the trees and they died. We are doing the same thing still, but we use the soil about the base of the trunk to collect the arsenic instead of thick bands, and we leave it there year after year. Some of us even, not satisfied with the spray which runs down the limbs and trunks, add to it by spraying the trunk too to make a perfect job, but why it should be done I don't know.

These are the two kinds of arsenical poisoning which I told about in Bulletin 131, but I did not tell all about the trouble; there are a great many things still to be told. It has not yet been determined to what extent we are to hold the alkalies, and especially lime, responsible for many sick trees. Though these questions are not settled, I am glad that we are learning to be much more moderate in the use of arsenical sprays, and I hope that the time is not far away when we will use even less than the most conservative of us are now recommending.



STREET SCENE IN GRAND JUNCTION, COLORADO, ON THE DENVER AND RIO GRANDE RAILROAD

# MIXING ARSENATE OF LEAD AND SULPHUR LIME

A. L. MELANDER, PULLMAN, WASHINGTON

WHEN we boil sulphur (S), lime ( $\text{Ca}(\text{OH})_2$ ) and water together we obtain the sulphur-lime wash. The chemical composition of this wash varies with the conditions under which the boiling was done. There are, however, three substances which can be found in the boiled mixture, and which have been formed from the original ingredients. They are called calcium pentasulphid ( $\text{CaS}_5$ ), calcium trisulphid ( $\text{CaS}_3$ ), and calcium thiosulphate ( $\text{Ca}_2\text{S}_2\text{O}_3$ ). It is supposed that the presence of the first, the calcium pentasulphid, gives most of the insecticidal value to the spray, and properly made sulphur-lime wash should have as great a proportion as possible of this pentasulphid.

The advantages of the sulphur-lime wash as a winter spray for dormant insects have been clearly known for some years. With its added use as a fungicide it has come to have even a wider popularity. The use of this spray as a specific for apple scab has necessitated an application which coincides in point of time with the early or blossom spraying for codling moth. Sulphur-lime is not a remedy for codling moth, while arsenic compounds, particularly arsenate of lead, are. If the orchardist could mix the sulphur-lime spray necessary for scab with the arsenate of lead necessary for the moth, he could greatly save on the labor cost of spraying.

Fortunately but comparatively few growers meet with this condition in this Northwestern Country, for in the river valleys where the moth is abundant there is but little scab, while in the pine-grown uplands where scab is most abundant, the codling moth is comparatively rare. Nevertheless, there are quite a number of fruit growers who live where both moth and scab must be combatted, and to them the possibility of making a single application of a combination spray is a serious question.

From chemical considerations alone one would be inclined to disapprove of mixing sulphur-lime with arsenate of lead. The mixing of the two is on a par with making the so-called "Oregon wash." This spray was formulated with the intention of combining the good properties of bordeaux mixture and sulphur-lime wash. Bordeaux mixture is made of copper sulphate (bluestone or blue vitriol) and lime. If to the sulphur and lime of the sulphur-lime wash we could add copper sulphate and some more lime we would get a combination spray that supposedly ought to have better properties than either spray used singly.

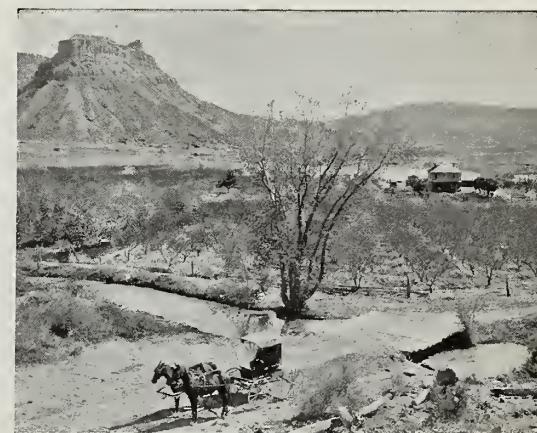
The fallacy of the Oregon spray could be explained by any high school scholar who has studied elementary chemistry. Sulphur and copper have a great chemical affinity for each other. That is to say, whenever a solution containing a salt of copper is mixed with a solution containing sulphur, the sulphur and copper unite to form copper sulphide, a

black precipitate that settles to the bottom of the liquid, and has as much value as so much sand. Therefore, in proportion to the amount of copper sulphate that was added to make the Oregon wash, the same amount of sulphur was being robbed from the spray, and the spray was being made just so much weaker. The Oregon spray did good work in its day. Undoubtedly so; but it was because it was made over-strong, and there was enough extra sulphur in the wash to kill the San Jose scale. When the Oregon wash was tested in comparison with the straight sulphur-lime, its weakness was apparent.

In a similar way there is a chemical reaction when sulphur-lime and arsenate of lead are mixed. This is at once apparent because a vile smelling gas is liberated and because a change in color occurs. The exact chemical changes that take place are intricate, and depend on the composition of the sulphur-lime. However, in the main the following reactions occur. The sulphur-lime ( $\text{CaS}_5$ ,  $\text{CaS}_3$ , and  $\text{Ca}_2\text{S}_2\text{O}_3$ ) added to the lead arsenate (most of the lead arsenate on the market has the chemical formula  $\text{PbHAsO}_4$ ), forms lead sulphid ( $\text{PbS}$ ), arsenic disulphid ( $\text{As}_2\text{S}_2$ ), arsenic trisulphid ( $\text{As}_2\text{S}_3$ ), calcium arsenate ( $\text{Ca}_3(\text{AsO}_4)_2$ ), and hydrogen sulphid gas ( $\text{H}_2\text{S}$ ). This reaction shows that both the sulphur-lime and the arsenate of lead have been decomposed, and that a combination spray of the two contains neither of the original ingredients. But a chemical study does not show whether or not the lead and arsenic sulphids are good insecticides, or whether the reaction products would kill the spores of apple scab. The destruction of the spray led us some time ago to discontinue this combination spray, for purely chemical reasons alone. It was not until a number of fruit growers persisted in giving a trial to the spray, sometimes with reported success, that the Washington Experiment Station undertook a field test to determine the exact value of this mixed spray.

The orchard of Mr. J. E. Trimble, near Garfield, was selected in which to make the test. The orchard had been sprayed the previous year with sulphur-lime for the scab, and with good success. A block of Blue Pearmain and White Pearmain trees, the oldest trees of the orchard and likewise the most wormy, was selected as they would give the most critical test to the spray. The spraying unfortunately had to be done with a worn-out pump, with leaking hose, in a high wind; and with the tall trees and no tower from which to spray, with the branches of the trees interlacing, and with a decidedly short crop, it was predicted that the spraying would prove unsatisfactory in protecting the crop. However, as the conditions were the same for all the tests the comparative difference in results would indicate the worth of the combination spray just as well as if the spraying had been carried on under ideal conditions.

Briefly, the results of this test are as follows: The trees that were sprayed with a mixed spray containing one pound of arsenate of lead to each sixty-six gallons, and also containing the prepared factory-made sulphur-lime at the rate of one part to fourteen produced 22 per cent of worm-free fruit, and of the 78 per cent wormy, 60 per cent had worms entering at the calyx or blossom end. The trees that were sprayed with arsenate of lead simply, the wash containing one pound of arsenate to each seventy-five gallons, produced 47 per cent of worm-free fruit, while of the 53 per cent that was wormy, 33 per cent was entered at the calyx end. Trees that were not sprayed at all, being left as checks, averaged 7 per cent free from



ORCHARD AND ORCHARD HOME NEAR PALISADE, COLORADO

Photo by Colorado Telephone Company

worms, while the calyx infestation amounted to 84 per cent of the wormy fruit.

Variety	How Sprayed	Per cent Free of Worms	Per cent Calyx Wormy
Pearmain...	Not sprayed .....	7	84
Pearmain...	Mixed spray .....	22	60
Pearmain...	Arsenate of lead, 1:75.	47	33
Jonathan...	Arsenate of lead, 1:75.	94	36
Jonathan...	Arsenate of lead, 1:50.	96	30

From this account it will be seen that it certainly does not pay to mix an arsenical with the sulphur-lime wash. Unfortunately for the experiment there was practically no scab in any part of Mr. Trimble's orchard this year. Even the unsprayed trees developed but a handful of scabby apples. The influence of the combination spray as a fungicide can therefore not be announced, but as it has lost its value as an insecticide, the practical fact remains that it should not be used. Before concluding, attention should be called to the excessive amount of calyx-wormy fruit in tests made with arsenate of lead unmixed. This calyx infestation attests the poor character of the spraying, and emphatically bespeaks the importance of having a good spraying outfit when the blossom spraying is done. In this case, however, an irregular blossoming period due to spring frosts will account for many of the unfilled calyx cups.

# FUNDAMENTAL PRINCIPLES OF IRRIGATION LAW

ADDRESS BY CLARENCE T. JOHNSTON, STATE ENGINEER OF WYOMING, AT THE NATIONAL IRRIGATION CONGRESS, SPOKANE

FOR over forty years the Anglo-Saxon of America has given his time and energy to the reclamation of the arid lands of the West by means of irrigation. As he has conquered Nature wherever his lot has been cast throughout the world, so has he succeeded in building canals and reservoirs and in bringing water to lands that only need moisture to be productive. His success in a material way has been marked. Unlike his brethren of Egypt, India and Australia, he has not protected the fruits of his conquest by the enactment of laws and regulations which insure perpetual stability and guarantee the peace and prosperity of the individual water user. We have built wisely on the ground, but we have failed to take those precautions which insure lasting security to a rural population.

Under the general government, the control of non-navigable streams is reserved to the states and territories. It would be presumed that these states and territories would accept the responsibility in a way that would guarantee protection to all who use water beneficially.

The Englishman, the German and the Frenchman naturally know but little concerning irrigation and irrigation principles when they are sent by their own governments to restore peace and order commercially in new territory gained by conquest. Wherever irrigation has been necessary under the flags of any of these nations, the wisest laws and regulations have been put into effect contemporaneously with the commencement of irrigation development on the ground. Italy and Spain have been visited by agents of these nations in order that the experience gained in these older irrigated countries might be applied for the protection of the citizens whose livelihood depends upon a wise and just distribution of the available water supply. As a result of this policy, countries that have been irrigated for thousands of years under native rule, are, under these new conditions, making remarkable progress. India, Egypt and Australia, as well as the provinces of South Africa, are examples of this kind. All foreign countries which have developed along irrigation lines provide a special administration for determining rights to use water and for protecting such rights after they have been defined.

Before it is possible to provide an efficient irrigation administration, it is necessary to understand what principles must be recognized in the law to bring order out of chaos and to furnish the relief sought. After forty years of practical experience in the field, the states and territories of the West have not thus far attempted to come to an understanding or agreement as to a single important principle that should be generalization congress annually. This is the seventeenth of such sessions. Much time of the congress is consumed by paid moulderers of public sentiment, advertisers and politicians. The majority of the resolutions adopted each year by the congress have no direct bearing on the vital questions we should consider. We have been tangled up with the National Irrigation Association and with forestry organizations in a way that is inexcusable. Neither have anything to do with irrigation. The members of none of these organizations can help us to arrive at conclusions which will benefit the water users. The congress has been used to some extent as a cat's paw by those who are employed to attack the public land laws. While such a campaign is based wholly on selfish, mercenary grounds, yet the agents who appear before the congress submit data, evidently having some sanction of government officials, which would lead the uninformed to believe that our land laws are not suited to western conditions. The argument they make is that our public lands are going into private control too rapidly. The truth is that progress along these lines is entirely too slow. It is possible that a campaign which would result in the restriction of the land laws by rules and regulations would add to the value

of land script held by some of the great corporations of the country. It is possible that those who hold such land script are far-seeing enough to recognize that it will repay them many-fold to hire agents to work up a public sentiment against the land laws. This probably explains the presence of some delegates from the East and makes clear the reason for their activity and their great concern in the disposition of the public domain.

We will be more or less bothered by those who believe that the resources of the country have been nearly exhausted. This class should be assigned as perpetual delegates and life members of some sanitarium, rather than to be classed as representing those principles for which the irrigation congress should stand. This cry for conservation is as foolish and as childlike as are many other theories entertained by those who have led in movements of the kind. The government employs men to study geology and to ascertain as to the visible supply of material on which commerce and prosperity must in a large measure depend. Those who have traveled and have studied extensively in the field are satisfied that the estimates of these compilers of data are as far from the truth as it is possible to be. The effect of the widespread advertising as to the shortage of one commodity or another has been injurious to the nation at large. There is nothing gained by employing men simply to scare people. Some dependence should be placed on government reports. Many of those issued relative to the conservation movement are nothing but danger signals, without tangible evidence of real danger. Adam could have spent his time worrying as to the water supply. The Pilgrim Fathers could have wasted their energies in campaigns of conservation. It is fortunate that those who have gone before us have given their time to development work, rather than in day dreaming. It is certain that Mother Earth will supply our tables and clothe our children for generations to come. We must be up and doing. Let us conquer the obstacles that Nature has imposed and make ready for a greater population and a higher civilization. Let us have confidence in the wisdom of the Creator. Let us believe that to date we have just touched the surface of the ground here and there, and that the vast wealth of the earth lies yet unknown in extent or character. It is remarkable that our scientists have already discovered coal enough to last us for several hundred years. They should not induce a panic because, through their puny efforts, the earth has not been more fully explored. Departments of the government which have time to advertise impending catastrophes and preach conservation only, should be weeded out and bureaus having some practical aim should be substituted for them. We have had more senseless



LIMB OF CHERRIES GROWN AT DELTA, COLORADO

Courtesy Business Men's Ass'n

matter published relative to forests than we need. Every man loves trees. No department of the government should take advantage of this natural sentiment to advertise all kinds of approaching calamities because some trees are being destroyed each year. No department of the government presuming to stand for scientific attainments can be excused for attributing benefits from forests which science must deny. When it becomes profitable for the land owner to grow trees on a commercial scale, he will do so. The people of the West are planting more trees than they are destroying. Let the government protect the public forests from fires and careless cutting, and encourage a lumber commerce. Allow the settler all rights in the public forests that he has enjoyed from the earliest days of the republic. The irrigation congress should not concern itself in supporting any department of the government or of the state which tends to restrict progress and development.

are more important matters for us to consider. The construction of irrigation works and the reclamation of lands are strictly engineering problems on the ground. The national government and each state administration should bend every effort to direct settlement, to the end that the best people may be brought to occupy our irrigated lands in the shortest possible time after water is ready for them. The future greatness of the West depends on the character of the rural population that we secure now. We should do something to assist the water user who, without a stable state or territorial administration, is left defenseless after the reclamation service and private enterprise retire from their physical labors.

Those interested in irrigation questions have been meeting annually for seventeen years. During all of that time this congress has not accepted a single fundamental principle relating to colonization or to the control of streams.

claims of riparian proprietors. Another will allow its citizens to claim all the water in sight and hold it as personal property, thus robbing individuals and communities that might make a beneficial use of the same. Nearly all of the states and territories provide what is called an irrigation administration. By cunning manipulation in the lawmaking bodies, many of these officers, who should be active and of some service to the water users, are robbed of executive authority. This is done at the instance of those who wish to continue an uninterrupted traffic in water and in water rights, regardless of the presumed rights of the actual water user or the community in which they operate. The courts have naturally found irrigation questions to be trying ones. It is natural that court decrees, even in the Supreme Court of a single state, are conflicting. The reason for this is that the fundamentally important principles are not embraced in the law. The courts have



STREET SCENE IN MONTROSE, COLORADO, ON DENVER AND RIO GRANDE RAILROAD



STREET SCENE IN OLATHE, COLORADO, ON DENVER AND RIO GRANDE RAILROAD

If the irrigation congress does not have for its object some educational purpose along irrigation lines, its value to the West is not great. The congress should at least consider questions of development, if it is not disposed to take up the broader problems relating to colonization and the principles of irrigation law and administration. The average delegate delights in generalities. Pretty phrases commanding the forest and the reclamation services appeal to him. What definite ideas has he relative to policies that should be embraced to further the work of the reclamation service? Does he believe that this work should be so conducted that projects will be taken up in less number, and those actually exploited be hastened to completion? Has he any idea as to the wisdom of restricting settlers to forty, eighty and 120 acre tracts instead of allowing all to select the limit of a homestead entry 160 acres? Does he believe that the government should greatly concern itself in irrigation development where private capital promises equally good works and equally cheap water rights?

If the irrigation congress can not assist the reclamation service in its work except by passing meaningless resolutions, its place as a factor in such development is a blank. If we can not help private enterprises in all legitimate development we have but little reason for maintaining an organization. In my judgment we should go further. There

We leave all of these questions, which should be studied from the broadest standpoint and applied generally, when found, to furnish the relief sought, to the courts of the various states and territories. This is an injustice. It is a burden on our tribunals of justice that should never be imposed. Courts can and will do everything possible to settle controversies among the people of the states and territories. The courts can receive testimony relating to appendicitis and issue decrees of a medical nature. The courts can take the place of our boards of health when properly informed by competent testimony. All questions might be brought to our departments of justice. As the race has grown in wisdom it has been found best to trust relief to those who demand it and enables the public to protect the individual as the individual deserves at the hands of the public.

The arid states and territories are fully represented here today. We assemble to discuss irrigation. Regardless of the pride we take in the history of our congress, we have accomplished so little. We have no settled policy as to the best method for carrying on the construction of irrigation works. We have no well defined ideas as to colonization. We can not say in unison that water belongs to the states and territories in perpetuity, or even that it belongs to the public. One state or territory may complicate the use of water for irrigation with the

considered and decided the question as to the ownership of water until the deepest irrigation student is in a dazed condition when he reviews the various decisions relating thereto. Practically all other problems of utmost importance to water users are in the same condition of uncertainty.

It must be admitted that the signs of the times point to a growth of some sentiment which promises, in time, a solution of these problems. This change has not been brought about or encouraged by this congress or by those who should stand for what is right in our lawmaking bodies. Thought along these lines is being crystallized by demands from the water user himself, and by those who are leading in the development of the West through private enterprises.

Unlimited traffic in water to suit the personal and financial interests of a few has been detrimental to the large body of water users. We should recognize this. We place ourselves on record, should we say that water always belongs to the state or territory in which it is used, and that the right to use should be limited to the extent of beneficial application of the water that is made under the law. We must then go a step further and hold that the right to use water belongs to the user and not to the individual or association. We must agree, at some time, as to the facts that must be secured to establish a right to

use and then provide an administration to protect such right when it is defined. But few states and territories have assumed to accept such a responsibility, even in a small way, yet I can say from an experience of nearly twenty years in such administrative work, that it is no more difficult than are many other branches of executive work that have been assumed by the public, and which are accepted without question as proper responsibilities of the public.

The history of the West during the past ten years is a sad commentary on the adequacy of state government in so far as the administration of our streams is concerned. The states and territories are not altogether to blame for this condition. Petty jealousies among those in high places and the advice of men who never had a day's experience in irrigation construction, the management of irrigation works or the administration or study of proper legal principles, have joined to complicate all attempts at reform in many legislatures. A propaganda was organized eight or ten years

ago, which evidently had the support of the reclamation service, which has done more to defeat good irrigation legislation than any one other movement. Evidently the object of this crusade was to leave the states and territories at the mercy of the officers of the government. Threats were made that if certain laws were not enacted, but little would be done by the reclamation service. A general code was prepared and issued under the authority of the government, as an outline for the states and territories to follow. Under this the director of the geological survey, then the head of the reclamation service, could dictate the appointment of state and territorial officers who were to be charged with the irrigation administration. The code recommended, was and is, in my judgment, of but little practical value. It has not worked successfully where it has been in operation. It does not define important principles but provides for procedures which are complicated, and, in many cases, impossible in practice.

We have done nothing thus far to

encourage settlement along lines that will insure continued prosperity and build up great states. This is a work that we could with profit undertake. Let us outline some plan of action before the Seventeenth National Irrigation Congress adjourns. Let us not claim that irrigation is to make homes on the land for the destitute of our great cities. We know that the best eastern farmer has trouble enough to maintain himself on a new farm in the West. How can we expect that a destitute family, without knowledge of agriculture of any kind, can succeed?

Is it not time, at this Seventeenth National Irrigation Congress, for us to awaken from our slumber? Should we not study fundamental principles and agree upon a platform setting forth their relative importance and their intrinsic value? Have we not had enough experience with moulders of public sentiment and with those who spend their time and energy before the doors of Congress, when their real duty lies in the fields of the West?

## GETTING A "PIECE OF LAND" IN THE WEST

Compiled by the Editor of the Pacific Monthly, Lute Pease, from Notes of Personal Observations, and from Contributions by Several Persons of Wide Experience in both Eastern and Western Conditions. Published by Permission and Copyrighted by the Pacific Monthly, Portland, Oregon

**T**HE most valuable man of this or any other country is the man who owns the land from which he makes his living. No other man has such a stake in the country. No other man lends such steadiness and stability to our national life. Therefore, no other question concerns us more intimately than the question of homes. Permanent homes for ourselves, our children and our nation—this is the central problem.

"The nation that will lead the world will be a nation of homes."

The foregoing is from a speech by that patriotic American, Gifford Pinchot, before the recent National Irrigation Congress at Spokane. It is in line with the spirit of the back-to-the-soil movement, of which there is so much in public utterances of late. Americans are going back to the soil because other avenues in the direction of independence are rapidly becoming closed. The day of small proprietorships in commercial

life is passing, while the farm holds out better promise of reward under better conditions than ever before. A "piece of land in the West" offers you a better chance today for independence and contentment than the average salaried position where the hope of becoming an owner, or of "going into business on your own hook," is slight. A little farm can give you that higher type of life which comes from owning your own business, and directing your own daily work.

Prospective homeseekers frequently write to western editors, asking for "the facts;" information that they can "rely upon," intimating some suspicion of the various advertisements and write-ups that have come to their attention. They doubt the statements made by the advertisers, as to profits from crops, size of crops, etc. It is our experience from observation of the "publicity" work of the present day that the literature can

usually be relied upon. Experience has taught communities and land companies that it pays to tell the truth, for the truth is in most cases quite good enough to interest people. Few exaggerations will be found in the vast amount of booklets, folders, and other literature used by the state, county and city publicity bureaus which have become so numerous and well organized throughout the Pacific States. Any of these bodies will be found ready to back up with abundant proof all instances quoted from a big crop record to a weather extreme.

To all those who seek information that may be relied upon at all times, we recommend the reports of the various bureaus of the Department of Agriculture, handling western work. The literature of the information department of the Reclamation Service; and the bulletins and reports of the director of the western experiment stations, Depart-



NEW CASTLE, COLORADO, ON THE DENVER AND RIO GRANDE RAILROAD



FIVE-YEAR-OLD ORCHARD AT FRUITA, COLORADO, ON THE DENVER AND RIO GRANDE RAILROAD

ment of Agriculture, Washington, District of Columbia, are most excellent. All such literature is furnished free on application. Also, if you will write to the chamber of commerce of the principal towns of the region in which you are interested, or the leading immigration-promotion organization of that state, you will be supplied with an abundance of entirely reliable information, on any questions you desire to ask. Among the principal organizations are: The Oregon Development League, Portland, Oregon; The Chamber of Commerce, Spokane, Washington; The Chamber of Commerce, Seattle, Washington; The Chamber of Commerce, Tacoma, Washington; The Idaho Development League, Boise, Idaho; The California Promotion Committee, San Francisco, California, and The Chamber of Commerce, Los Angeles, California.

hay. Fruit-growing seems to be the ideal of the average city man that wants to get back to the soil, and a far greater number of educated, refined persons are engaged in it than in any other farm occupation in the West. Your grain, alfalfa, stock farmer "hates to bother" with an orchard, but this is the day of small holdings, thickly-settled communities and intensified cultivation.

But to be concrete: If you decide to go in for a highly diversified farm in a thickly-settled or shortly-to-be-thickly-settled region, with first-class transportation facilities, ten to forty acres is quite sufficient. In fact, on many of the irrigated tracts forty acres is the maximum limit you will be allowed to hold. It has been agreed, time and again, that the average ten-acre irrigated tract is more profitable than the average 160-acre eastern farm. Such land costs

our favored far West, where crop failures are practically unknown, and where the rapid development of the country increases the value of your holdings with surprising swiftness, will put you in possession of a place, paid for in five years, that will be worth from double to three or four times as much as it cost you. Never "discount the future" in getting Western lands. They have everywhere gone up in value, and are going up every day. Do not be afraid to take risks when you have selected a good location.

Irrigated lands are of three classes: Government reclamation projects, Carey Act projects and privately-owned projects.

Private projects are where an individual or a corporation owning a large tract of ground, with an available water supply, digs a ditch or a system of



HEATERS IN COLORADO ORCHARD, ALONG THE LINE OF THE DENVER AND RIO GRANDE RAILROAD



PICKING APPLES AT FRUITA, COLORADO, ON DENVER AND RIO GRANDE RAILROAD

How Much Land is Required to Enable Me to Make a Living for Myself and Family?—The answer to this question, of course, involves your own character and make-up as well as that of the land. Industry, thrift and perseverance combined will produce satisfactory results even though the land is lacking in some particular. Making a living is not merely managing to exist, but we mean: Making an independent, respectable living, and thereby keeping up the American standard of living. The average family is said to be five in number, and if we allow \$300 annually for each person to cover the cost of living, clothing, literature, music and recreation—\$1,500, to which we should add \$500 for the proverbial "rainy day"—about \$2,000 would be the sum necessary to be earned.

How much land you will need depends altogether upon what crops you intend to raise. Beyond all question you can make a good living off a smaller acreage in fruit (aside from truck gardening near large towns) than in any other kind of crop, but the best fruit lands are generally higher in price, and more labor is required to care for a ten-acre orchard than several times that area in wheat or

from thirty-five dollars to \$150 an acre, unimproved, and from \$100 to \$300 an acre, improved, and occasionally, and in a few places, from \$500 to \$2,000 for highly improved tracts. If you are willing to go a little further back, and go in for livestock, grain, dairying and such lines of farming, you can find plenty of opportunities to get land in tracts of 100 to 600 acres at prices from five to forty dollars an acre. These prices, too, usually include some improvements, such as fencing, cheap buildings and a few acres under cultivation. If you have the money it is better to buy the best improved land, and pay a good price for it. Everywhere in the world men can be found who are willing to sell, and it argues nothing against the West that there are plenty of good farms for sale at reasonable prices. Americans are restless.

Even where you haven't much money it is well to borrow more and buy a good, improved place. Land in the West, under proper management, will, in a very short time, pay for itself. You can buy plenty of well-improved farms for from \$3,000 to \$6,000, on such terms as \$1,000 down, balance in five years at six to seven per cent. This plan, in

wells, putting the reclaimed lands on the market at prices ranging from forty dollars to \$200 per acre. Many such projects are highly meritorious, and are to be found in all of the western states. Of course, it is advisable always to investigate with care as to the water supply, titles, etc. In other words, be sure that you will not be buying a law-suit in buying an irrigated farm.

Government reclamation and Carey Act projects have heretofore been very exhaustively described in the pages of this magazine. It may be briefly repeated that they have been uniformly successful, and undoubtedly constitute the greatest single element in the development of the West. Full information about any or all of them may be secured by writing to the United States Agricultural Department, Washington, District of Columbia, and to the state land board at the respective state capitals.

Reclamation projects usually take in the larger and more expensive irrigation enterprises, and the land is sold to the settler at the absolute cost for the water right. The price varies from about twenty-five to sixty-five dollars an acre, an actual average, according to Director Newell of the Reclamation Service, of

about forty-seven dollars per acre. This is payable in ten annual installments, without interest, and the settler on all public lands of such projects secures title only by residence and improvement, under the same restrictions as the homestead law, except that he cannot "commute" by fourteen months' residence.

The government reclamation projects are built entirely by the government from funds derived from the sale of public lands. The Carey Act projects are built under the supervision of the respective states, by privately-organized companies, who expect to derive a profit above the expense of construction, by the sale of the water right. The government, under the Carey Act, gave to each of the arid-land states 1,000,000 acres, in consideration of the irrigation and settlement of not less than twenty acres in each 160 reclaimed, whether at the hands of the state or through contract with private corporations. Under

than under an originally higher-priced government project. You may hear a great deal about government work being slow, etc., but it is proverbial that it is solid and thorough, and about the best that time and money can make it.

While in many instances in the past, Carey Act projects have been cheaper for the settler than many of the government projects (in respect to the investment per acre for the water right), yet it cannot be successfully disputed that, generally speaking, and in the long run, the government project is less expensive, especially in view of the recent very rapid increase in price of new Carey Act lands. In some states, a 100 per cent profit is considered not at all excessive for a Carey Act company. The company, we will say, invests \$1,000,000 in a lump, for the reclamation of the tract. It must depend upon payments from settlers for its returns. In some cases settlement has

rise in the value of the products from irrigated farms, in comparison with which the water charges often seem trivial."

Some of the states have prosecuted irrigation enterprises under the Carey Act with such vigor that Congress has increased its gifts of public lands to them. In Idaho, with its splendid water law, is the banner state for development under the Carey Act. This state, for instance, has entered into contracts for the reclamation of 1,480,299 acres of desert lands, and applications are now pending with the state for the reclamation of another million acres under the Carey Act. Said Governor Gooding of that state in an address before the recent National Irrigation Congress, at Spokane:

"The last United States Congress, recognizing the work Idaho has done in reclaiming her desert lands, gave the state two million acres more of Carey Act lands, making a million acres more than has been given to any other state. Water is now available for more than 500,000 acres of Idaho Carey Act land, some of which is fast reaching a high state of cultivation, and is selling at as high as from \$100 to \$300 an acre. The work of reclaiming the state's desert lands under the Carey Act commenced in earnest when Frank Buhl, of Sharon, Pennsylvania, and his associates entered into a contract with the state in January, 1903, for the reclamation of 270,000 acres of desert land known as the Twin Falls South-Side Project. Frank Buhl can truly be called the pioneer in Idaho's great work under the Carey Act. On this project he built the largest irrigation canal in America, with a width of 120 feet at the top, eighty feet at the bottom, ten feet deep, and with more than one thousand miles of main canals or laterals to distribute the water. More than 25,000 people have already found homes on this splendid body of land; a new county has been created to serve the tract, and it already has a property value of more than \$20,000,000. This project will probably be greatly enlarged soon by the western extension of the South-Side project, to include a body of land more than 600,000 acres in extent, and of as fertile soil as can be found anywhere in the West. To build the canals and reservoirs for this area will call for the expenditure of nearly \$25,000,000.

"In the last five years enough miles of main canals or laterals have been built in Idaho to reach half way round the world, and more than one hundred million dollars have been added to the value of lands in the state, and the foundation has been laid for many times one hundred million. Idaho has added to her population sixty thousand people through its Carey Act projects. In two years more one million acres of this land will be completed, and water will be available for every acre. This will provide homes for more than one hundred thousand people. Twin Falls, a city just five years old, has a population of nearly six thousand, and many other new towns have been created. On these Carey Act



DE BEQUE and BONITA VALLEY, COLORADO, ON DENVER & RIO GRANDE RAILROAD

this law the settler buys not less than forty nor more than 160 acres, and he can complete the requirements for residence and cultivation in three years instead of five, as under the reclamation act. In fact, in some states, you can complete all requirements and get title to a Carey Act project within thirty days after making settlement, if you have the means to make the one-eighth-of-area improvements and the payments. The cost of Carey Act lands is sometimes less than under government reclamation, notwithstanding the profit allowed by the state to the corporations undertaking the work. This is because the government undertakes the larger and more expensive enterprises. However, it must be remembered that you pay interest on all deferred payments under the Carey Act, which very materially adds to the cost. Also, that although many of the Carey Act projects are constructed most thoroughly, and compare very favorably with the best government work, some of them are less expensively built, and therefore not so permanent. In other words, your cost of maintenance will sometimes, in the long run, bring the price higher

not been fast enough to pay even a fair rate of interest on the capital invested, so that when a tract is not completely settled in many years, it will readily be seen that a 100 per cent profit is not excessive.

The government, however, figures no interest whatever, and consequently the slowness of settlement has nothing to do with the cost to the settler. Mr. D. C. Henny, consulting engineer of the reclamation service, recently pointed to the rapid increase of water-right charges over the entire West during the last few years.

"Private companies in many localities charge \$75, \$100 and \$125 per acre, and the higher-priced rights sell more rapidly, where conditions are favorable, than do rights at lower prices in less-favored localities. The reason for this is that labor and material cost more than formerly; that the element of time involved in settlement, and waiting for financial returns, is better appreciated and more properly allowed for, and that the cheaper projects were taken up first. Recent irrigation development has generally had to provide for expensive storage features. There has been a similar

projects something is done beside the mere placing of water upon the land; great power plants are built, power lines are constructed through some of the larger projects, giving the people electric lights, and in some instances heating their homes with electricity. Assistance is given by the companies to build school houses, churches, and some of the best hotels in the state are now found upon these projects."

It has been recently estimated by Governor Hay, of Washington, that a total of 13,000,000 acres were irrigated last year west of the Mississippi River, and water can be gotten eventually on 39,000,000 acres more. Fully 10,000,000 acres are under privately-owned ditches. The government has now under way thirty projects, embracing, when complete, 2,225,000 acres, at a cost of \$89,000,000, or thirty-nine dollars per acre. Fifty-two million dollars will have been expended by the government up to December next. Eight projects, totalling 200,000 acres, are complete; nine projects, covering 797,000 acres, are 77 per cent complete; seven projects, covering 750,000 acres, are two-fifths complete, and six projects, covering 538,000 acres or less, are 37 per cent complete.

George E. Barstow, president of the National Irrigation Congress, said, at the recent session, that in the year 1908 there were some 300,000,000 acres under cultivation in the humid valleys of the whole United States, the crop value from which was \$8,000,000,000. "When the 60,000,000 acres of arid land are under cultivation the annual crop from it will be worth \$6,500,000,000." Irrigationists estimate that the arid lands under irrigation have a productive capacity of four to one better than non-irrigated lands.

The progress of new railroads and the march of development in all directions is constantly opening new districts of hitherto undreamed-of possibilities, not only in irrigated lands, but non-irrigated lands as well. For instance, along the Columbia River, between Oregon and Washington, thirty or forty miles east of the Cascades, is a lot of "bench land," where the finely-pulverized alluvial and residual soil of extraordinary fertility has been dry-farmed for wheat, without any noticeable deterioration in twenty-five years. It has just been discovered that here is some of the best almond and apricot land in the whole West. The coming of the North Bank Road has brought a lot of orchardists into this Goodnoe Hills—Nutland Hills—district who are cheerfully paying \$100 an acre for land that could have been had formerly at from ten to fifteen dollars. It is in this neighborhood that Samuel Hill, a relative of James J. Hill, and associates have purchased large areas of land for colonization purposes. The building of railroads into eastern Oregon, now under way, will undoubtedly open many farming and orchard sections, destined to be as famous in time as the Yakima Valley of Washington is now. The building of an along-

the-coast railway from San Francisco to Astoria will mean the future fame of innumerable valleys. Southern Oregon has awakened recently, and is demonstrating the extraordinary value of its lands and climate for apples, peaches, pears and grapes.

Millions of acres of good "dry-farming" land are waiting for you to "take up" now, under the 320-acre homestead act, in the various arid-land states. At this moment thousands of settlers are moving into eastern Oregon in advance of expected railroad construction, and

four pounds each were sold for \$150,000. The valley is small in acres.

White Salmon Valley, directly across the Columbia, is considered even better for strawberries because its southern slope brings an earlier harvest. A score of other places are yielding just as good fruit, but as the Hood Rivers first made a world-wide reputation the popular mind gives that entire locality a copyright of excellence.

The Hood River Valley first brought the Inland Empire into high repute for its pomological productions. The cherry, its superior size, its beautiful color, its exquisite flavor and firm pulp was the first to stand pre-eminent in the market. It is unequaled outside of the Inland Empire. The Hood River apples, too, have a marvelous reputation. The size, splendid coloring, rich flavor, unequaled keeping qualities and freedom from insects place the Inland fruit in the highest rank in the known world. The apples in particular go to all lands, and some varieties keep in good condition for more than a year after picking. Hood River alone yields annually an average of 60,000 boxes, selling at from \$1.50 to \$4.00 a box. The nature of deciduous fruits, to do their best, demands frosty winters. The writer knows that when the best California apples are selling slowly at eighty cents a box about San Francisco Bay, the Hood Rivers by their side go quickly at \$2.50 a box. The White Salmon, Yakima, Wenatchee and southern Idaho valleys have proved themselves not inferior to Hood River for deciduous fruits. After years of experiment, comparison and discussion, the Hood River cultivators are not yet agreed that irrigation is essential to a full apple crop on volcanic soil. On the dry hills back from The Dalles first-class fruit is grown where irrigation is impracticable. Alluvial soil, however, near the river needs more water than Nature furnished, and soon the addition of fertilizers. The best fruit belts yield annually from \$500 to \$1,000 per acre. The "red-shot," semi-clay soils of the Hood River and White Salmon districts are considered excellent for apple-growing.

The market, particularly for apples, cannot be overstocked, for there is a steadily increasing demand in the eastern cities, in London and Paris, and all along the western coast of the Pacific Ocean.

The fresh breezes from the placid Pacific through the mountain gorges, mingled with the pure air from neighboring snow peaks in different sections, form an atmosphere unexcelled anywhere for healthfulness. The common diseases which shorten human life in most of the older states are here nearly unknown unless imported. The population, on the average, enjoy great vigor of body and mind and uniform comfort.

*Editor's Note:* People seeking information about Colorado, Oregon, Washington, Idaho, Wyoming, New Mexico, Montana, Utah, California and British Columbia can obtain splendid, illustrated booklets and literature by addressing the Commercial Club or Chamber of Commerce in most any city in these states.



YAMHILL COUNTY, OREGON, DISPLAY OF ENGLISH WALNUTS AT NATIONAL LAND AND IRRIGATION CONGRESS, CHICAGO NOVEMBER, 1909

some of them are getting as good homesteads as were ever taken in the West. Many of the claims will be worth forty dollars to \$100 per acre in from five to ten years.

Before historic times Hood River Valley furnished the Indians with abundance of wild strawberries. The early immigrants soon produced a rare hybrid between the native and the best available improved variety, which is of desirable size, excellent flavor and the best-known keeping quality. Owing to their superior qualities they soon found a ready market in The Dalles and Portland. It was 1889 before the first crate was shipped out of the state. "At the Columbia Exposition the Hood River strawberries took the first prize, though they had made a journey of two thousand miles and had been shut up four days in an express car." For some years past this fruit has found ready sale, in the best condition, in Montana, Winnipeg and all the great cities in the Middle West. Last year 90,000 crates of twenty-

## ANNUAL REPORT GRAND JUNCTION FRUIT GROWERS

BELOW is given the annual statistical report of Manager John F. Moore of the Grand Junction Fruit Growers' Association of the city of Grand Junction, Colorado, presented to the members at the annual meeting held at Grand Junction January 14 and 15, 1910. The principal subject of discussion was the proposition to increase the capital stock from \$100,000 to \$200,000. This was effected by an almost unanimous vote. The meeting throughout was very harmonious, and is another record of which the association may be proud. The meeting occupied two days and was held in the Auditorium. It was attended by about 600 growers who are members of the association. Nearly all of the members participated in some manner in the discussions for the upbuilding of the association. The following directors were elected to serve for the ensuing year: A. J. Harvey, Clifton; J. J. Bridges, Palisade; Fred Baisch, Palisade; R. A. Orr, Fruit Ridge; James H. Smith, Orchard Mesa; W. J. S. Henderson, Fruitvale; R. E. Turpin, Pomona; A. E. Johnson, Fruitvale; L. E. Jaynes, Fruit Ridge.

## MANAGER'S ANNUAL REPORT

It again becomes my duty, as manager of the Grand Junction Fruit Growers' Association, to submit to the members my annual statement for the past season of 1909. The past year, according to tradition, should have been an unlucky one, as it was my thirteenth year as manager of this association; but, instead of it being an unlucky year, it seems to me it has been one of the best yet. However, it really seems to me, everything considered, that every one of the thirteen years has been good. We have not always had a full crop, but on the other hand we have generally had a fair crop, and only one total failure, which was in 1898. I believe you will bear me out in stating that every season the prices realized by us were as good or better than any other concern shipping fruit, and as for the stockholder—the man who furnishes the money which enables us to carry on our business—with the exception of two years we have always made good returns for the use of his money. It has been the custom for the past several years for your board of directors to employ an expert accountant to audit our books at the close of the year, and I herewith submit the report of Mr. M. M. Hamma, expert accountant, showing the financial condition of your business at the close of the year 1909:

## FINANCIAL STATEMENT FOR 1909

## Assets—

Lands and lots at our various shipping points	\$16,187.25
Buildings, platforms and switches	26,536.86
Furniture and fixtures	7,985.54
Merchandise	62,958.95
Stocks and bonds	81.25
Bills receivable	2,900.72
*Accounts receivable, growers	14,757.79
Accounts receivable, merchants, etc.	15,795.76
Cash on hand	186.36
Bank of Palisade	113.15
†Fruit purchase suspense	7,543.37
Suspense accounts	493.05
Freight claims	3,599.16
Interest earned (not collected)	195.13
Expense unearned	2,567.61
Denver apple exhibit	2,092.71
Total	\$163,994.66

## Liabilities—

Capital stock	\$100,000.00
Surplus from 1908	3,008.93
Profits on sale of land at Palisade	2,000.00
Net earnings for the year	23,251.77
Unclaimed dividends	166.13
Bills payable	11,500.00
Mesa County National Bank	20,574.84
Undercharges	752.23
Accounts payable	2,710.76
Total	\$163,994.66

\* The item "Accounts receivable, growers, \$14,757.79". Of this amount \$6,091 is money advanced to growers on apples that are now in storage.

† The item "Fruit purchase suspense, \$7,543.37," is money we have paid the growers on apples that are sold, but on which we have not yet received payment.

At a meeting of the board of directors of your association, held January 13, 1910, they increased the value of the lands and lots at Clifton \$2,000, thus making the net assets \$130,290.70.

M. M. Hamma,  
Certified Public Accountant.

## AVERAGE PRICES REALIZED

Apples—Jonathan, fancy, \$1.96; choice, \$1.30; Grimes Golden, fancy, \$1.75; choice, \$1.21; Ben Davis, fancy, \$1.21; choice, 79c; Missouri Pippin, fancy, \$1.46; choice, 91c; Winesap, fancy, \$1.91; choice, \$1.38; Genuine Gano, fancy, \$1.11; other varieties, fancy, \$1.47; choice, \$1.20.

Peaches—Elberta, extra, 76c; fancy, 67c; choice, 61c; Yellow and White, extra, 59c; fancy, 55c; choice, 47c.

Pears—Anjou, fancy 1 and 5-tier, \$2.68; 6-tier

and choice, \$1.45; Kiefer, fancy 4 and 5-tier, \$1.67; 6-tier and choice, \$1.17; Bartlett, fancy 4 and 5-tier, \$2.09; 6-tier and choice, \$1.67; Flemish Beauty, fancy 4 and 5-tier, \$1.63; 6-tier and choice, \$1.15; other varieties, fancy 4 and 5-tier, \$1.40; 6-tier and choice, 92c.

Cantaloupes—Standard, 70c; Pony, 31c; Jumbo, 52c.

## SUMMARY OF SEASON'S SHIPMENTS

From Grand Junction—Apples, 507 cars; pears, 115; peaches, 20; cantaloupes, 2; honey, 3; potatoes, 39; total, 686 cars.

From Clifton—Apples, 212 cars; peaches, 47; pears, 58; cantaloupes, 98; total, 415 cars.

From Palisade, including Bridges—Apples, 67 cars; peaches, 321; pears, 8; total, 396 cars.

From other points—Apples, 147 cars; pears, 1; cantaloupes, 12; total, 160 cars.

Total carloads from all points—Apples, 933; peaches, 388; pears, 182; cantaloupes, 112; honey, 3; potatoes, 39; grand total, 1,657 carloads.

## WHERE THE FRUIT WENT

To Alabama, 4 cars; Arizona, 5; Australia, 1; Canada, 4; California, 16; Colorado, 128; Illinois, 61; Indiana, 1; Iowa, 103; Kansas, 109; Louisiana, 74; Maryland, 1; Massachusetts, 19; Mexico, 1; Minnesota, 111; Missouri, 88; Nebraska, 152; New Mexico, 1; New York, 146; North Dakota, 3; Oklahoma, 63; Ohio, 4; Pennsylvania, 39; South Dakota, 52; Tennessee, 20; Texas, 388; Utah, 2; Wisconsin, 9; Wyoming, 13. Total, 1,618 cars.

## CARLOADS IN

Box shooks and growers' supplies, 198 cars; nursery stock, 4; merchandise, 58; seeds, feed and hay, 50; oil, 33. Total, 343 cars.

## SUMMARY

Total cars out by freight, 1,657; total cars out by express, 232; total cars in by freight, 343. Grand total, 2,232 cars.

Total amount paid to the growers, \$1,070,486.18.

Total amount of business, \$1,538,673.32.

## HOW THE BUSINESS HAS INCREASED

Of the above cars shipped, we still have in storage and transit sixty-six cars of apples, and the statement showing the amount paid growers does not include these cars. In my opinion, when all our fruit is disposed of, the returns to the growers for the season's shipment will aggregate at least \$1,105,000. It will, no doubt, interest you to know the number of cars shipped each season and the amount paid the growers, and I append a statement of the same covering the past thirteen years:

1897	167	\$ 54,085.00
1898	56	21,785.10
1899	37	21,346.28
1900	163	64,323.83
1901	195	95,862.65
1902	453	195,975.13
1903	537	247,188.45
1904	1,112	437,154.33
1905	797	475,763.00
1906	1,152	555,813.41
1907	905	700,625.00
1908	423	334,696.15
1909	1,850	1,070,486.18

## MANAGER'S IMPORTANT STATEMENTS

To sum up the season's business, it seems to me we have been very fortunate. As you all probably know, the fruit crop of the entire country west of the Mississippi River, with the exception of California and Colorado, was almost an entire failure. This enabled us to realize unusually good prices. If I remember correctly, this season's prices have been better than any other except one in thirteen years. And here I wish to call your attention to a fact, and that is, the growers generally in Colorado, when they learned the crops were short in the West, began to believe prices would be unusually high, and in my opinion we did realize high prices, owing to the fact that the Northwest had a failure, therefore the only desirable box apples to be had were from Colorado. We took advantage of the situation and got fully all our apples were worth, and we know the prices the Eastern dealers paid for apples, their margin of profit so far has been small. But in my opinion it is to our advantage in marketing our fruit to sell at a price that allows the dealer to make money; then he is our good friend and comes back and buys freely another year. But you should stop to consider what a small part of the fruit grown in the United States is grown west of the Rocky Mountains. In my opinion it is less than five per cent; in fact, if every fruit district in the West is a total failure, the Eastern markets would not realize the difference in a general way. But we have one advantage, and that is our superior quality, color and pack, and for that reason we will for a great many years to come realize profitable prices for fruit, regardless of whether the East has a large crop or not. We Colorado shippers, as well as the Northwest, have done wonders during the last few years in advertising our apples, peaches and pears. This has been accomplished to some extent through the fruit trade journals, but largely by systematic distribution. Very few realize how difficult it is to place the first car of box

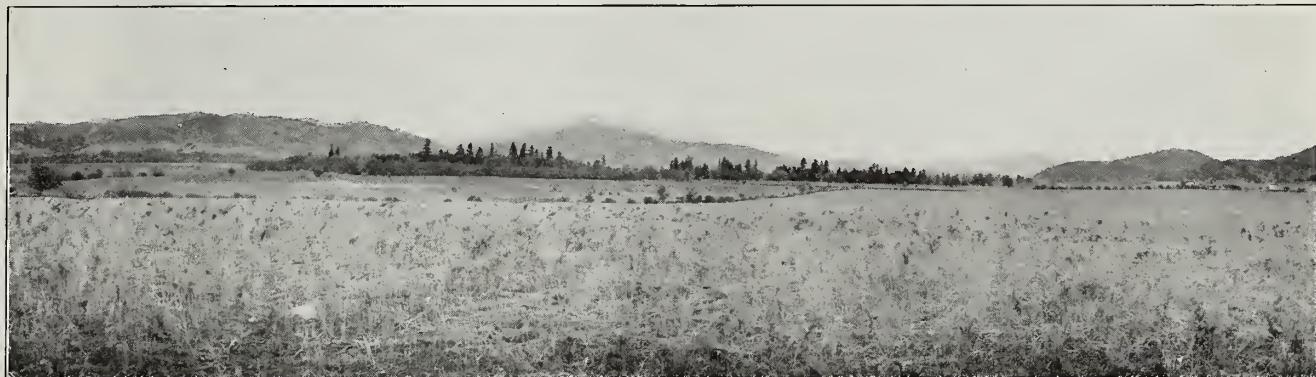
apples in any new market. Sometimes we have to do so at a loss. I have personally visited a good many markets in the past and have the dealers tell me to go back to Colorado and pack our apples in barrels like other apple shippers, and on some occasions it was impossible to persuade the dealer to even handle a car on consignment; but now there is no market but what has heard of box apples favorably. As our crop increases there must be still more markets developed, and our success for the future depends largely on proper distribution. I also wish to say to you, as our supply increases we must improve our grade and pack. Some markets are not critical, while others are, and with our rapid increase it will not be long until we must get into all the markets. Just stop to consider the large consuming markets are east of the Mississippi River and the large apple producing districts are east of the river; therefore if we are going to ship our apples right into the apple growing districts and pay heavy freight charges it is not reasonable to believe we must have both better fruit and better pack and grade. There are few seasons but what you can buy the best varieties of apples in New York state for \$2 a barrel. But, for example, a box of Ben Davis at \$1.25, freight 50 cents, storage 25 cents, makes it cost the dealer \$2. Now, can't you realize that your apples must be perfect, not only perfect in one way, but every way—good size, good color, good pack—to enable you to get into those markets. And let me say to you that we are not taking the pains and care in growing our apples that we should. A good many of our orchards have been planted too close and we haven't the courage to cut out one-half or, yes, two-thirds, of the trees, but we go on from year to year sapping the life from our ground and growing small and poorly colored apples. There are also others who are afraid they will cut off too many limbs and not have quite so many apples. Now, gentlemen, I know whereof I speak, and the grower who fails to produce large fruit, well colored and well packed, is going to lose out; and it is my opinion we should make some changes in our grading, but we will speak on this subject later. Before concluding I wish to say something in reference to transportation. The roads east of Denver gave us excellent service. Previous to three years ago our average time from Denver to the Missouri River was forty-eight to sixty hours, but with the increased business, giving them trainloads the past season, the average time was less than thirty hours. Our two local roads made a great effort to give us splendid service and were in line to do so, but just as our shipments of peaches and pears began the rain set in, which caused them great expense and the shippers annoying delays; but they used their best efforts, and that is all we could expect. When apples began to move we found a shortage of cars, and for a time it appeared that we would not be able to move our crop, and in fact we were compelled to use ordinary box cars to some extent, but we managed to wind up the season without a loss. Referring to cantaloupes, the results proved somewhat unsatisfactory. Our neighbor, the Rocky Ford district, had an unusually large crop and the best quality they have had for several years, and the markets were well supplied from other districts also. For some reason our melons failed to carry as well as usual; we attribute this to the unusual amount of rain. But while the prices realized were not as good as in former seasons, still in my opinion the results show some profit above labor and other expense, and I believe our growers should not become discouraged. I learn from good authority, in fact a published statement from one of the large associations in the Rocky Ford district, that they only averaged 51 cents net from Standards and Jumbos; however, they have signed up for another year. Referring to our dividends, this may look large to the small stockholder, but when you stop to consider that we paid no dividends last year this only makes a fair return for the two years, and you will notice it is less than two per cent on the business done, and no one can figure a business down closer and feel sure the business would not show a loss; in fact, before making up our annual statement I very much doubted whether we would show any profit at all. Now I wish to call your attention to the notices published in connection with voting at this meeting on the proposition to increase our capital stock to \$200,000. During the past season we were compelled to borrow \$65,000 to handle our business. This is an unreasonable loan on a capital of only \$100,000 and would naturally impair our credit, and to say the least your management and directors should not be expected to raise by borrowing this large sum of money, and now we are going to need even more money to run our business properly. We must enlarge our facilities. We have already purchased a desirable tract of land at Palisade and let a contract to put up another building and enlarge our platforms. At Grand Junction we need an office building separate from all other buildings; also need to enlarge our platforms. At Clifton we also need another building and additional platforms. All of these needed improvements will cost probably \$20,000, and you also must realize that the more our business increases the more capital it requires, and I sincerely trust every member will vote in favor of increasing our capital stock.

## TO OPERATORS

WE DEAL EXCLUSIVELY IN

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READY FOR

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ADDRESS

M. C. MILLER

ROSEBURG, OREGON

## BETTER FRUIT

HOOD RIVER, OREGON

OFFICIAL ORGAN OF  
THE NORTHWEST FRUIT GROWERS' ASSOCIATION  
A MONTHLY ILLUSTRATED MAGAZINE  
PUBLISHED IN THE INTEREST OF MODERN  
FRUIT GROWING AND MARKETING

ALL COMMUNICATIONS SHOULD BE ADDRESSED AND  
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ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906,  
at the Post Office at Hood River, Oregon,  
under Act of Congress of March 3, 1879

ods of packing fruit, has never been equalled.

October edition was one of our general issues, containing much valuable information, covering sixty pages.

The November edition was a hummer on irrigation, containing 104 pages. The Pacific Monthly, of Portland, wrote us, "The November is the best edition ever produced by any publication in America on the subject of irrigation." Quite a compliment.

The December issue contained eighty-four pages and was devoted to the subject of planting, pruning and orchard heating. The appreciation of this edition is indicated by the continual call for this edition long after it became exhausted.

The January, 1910, edition, consisting of eighty-four pages, is devoted to the National Apple Show at Spokane. No event in the Northwest has ever been illustrated by any publication as handsomely, with as fine cuts or as fine quality of paper.

The February, 1910, edition consisted of eighty-four pages, our special spraying edition in advance of this season. For valuable, practical and technical information, handsome in every detail, it stands without comparison.

The object lesson should be clear to every fruit grower of every district. "Better Fruit" started in as "Better Fruit," being better than any other publication of its kind in America, about four years ago, publishing twenty-four pages. It set a pace that has never been equalled, increasing from twenty-four pages per issue to an average of sixty-four pages for the year 1909, with no issue smaller than eighty-four pages this year so far, the present edition being 100 pages. It is printed on better paper than any horticultural paper in America, it uses the handsomest and largest cuts and more of them. Its articles are always practical and valuable to the fruit grower. It always contains a number of technical articles about the fruit industry and in addition, is filled with general information always interesting to those who are putting in capital and devoting time to the business of fruit growing.

The subscriber to "Better Fruit" is getting for \$1.00 three or four times as much reading matter in every issue as he will get in any other similar publication. For high-class quality in every respect, "Better Fruit" stands without an equal. Including the money which the publisher put in, and the revenue which the paper has earned and put back, it has cost over \$75,000 to bring "Better Fruit" to its present standard, and four years of the hardest work that we ever engaged in in our lives, under the most adverse conditions. Practically every friend and acquaintance of the publisher, and also every fellow publisher that we consulted, prophesied failure.

These prophesies would no doubt have come true had we not been able to put in money when necessary and work hard without pay for four years. The minimum cost of publishing "Better Fruit" is \$2,500 per month, and the average cost of January, February and March will be about \$3,500 per

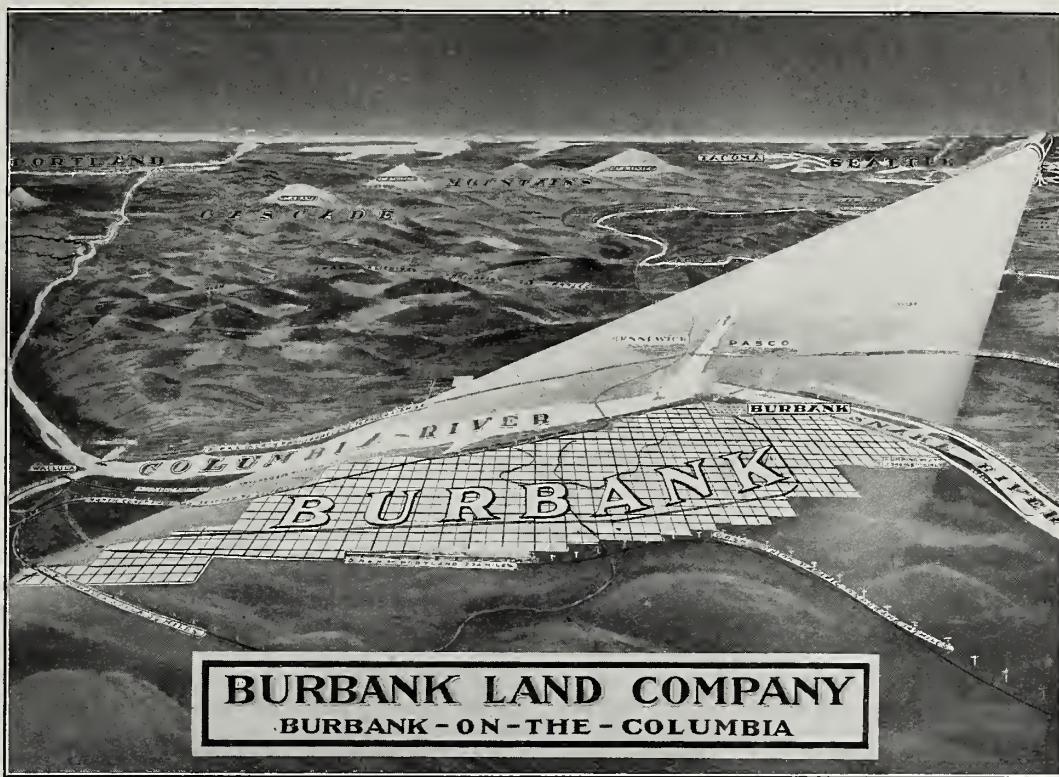
month. This means that "Better Fruit" is in a position to do more for the fruit industry and every district in the Northwest than any other publication in America. It seems to us that the fruit growers and business men will certainly grasp the opportunity of profiting by what "Better Fruit" can do for them and their locality by giving it, not only their endorsement but their enthusiastic support by assisting in every way possible, becoming a subscriber and advising their friends to subscribe. Every business firm who wants the business of the fruit growers of Colorado, Utah, Montana, Idaho, Washington, Oregon and British Columbia cannot afford to pass "Better Fruit" by as an advertising medium. "Better Fruit" is not only valuable but attractive in every way, broad-minded, liberal and generous with all districts. Therefore, it is entitled to universal support. We do not believe that any sensible fruit grower or business man will for one moment imagine that they can get the same information out of a local fruit growers' paper, or that it will do his district and the fruit industry as much good as "Better Fruit."

We, therefore, hope that our support will not only continue to be universal, but we believe the fruit growers are sensible enough to assist us in increasing our influence and circulation, not only for their own good but for the pride and honor of having the Northwest publish the best and handsomest fruit growers' paper in the world. We do not ask you to withdraw your support from your local paper, but we do ask that every fruit grower in the Northwest support "Better Fruit," because one good, general fruit growers' paper can do many times as much for the fruit industry of the Northwest as an unlimited number of local horticultural journals. Our belief is, which we submit for your consideration, that the fruit grower and district, who, in order to maintain a local paper withdraws its support from "Better Fruit," will lose more than we will, because "Better Fruit" has become so large and its circulation so great that the loss of our subscription list in any territory would not materially affect our present standard. It will be our earnest endeavor to give every district the best representation that our ability can produce and our finances afford, so we beg to say that we are more anxious than ever to have the support of every district and the united support of the

## CLEAN UP JOB

We are closing out our surplus stock, on hand from this season's delivery, at very low prices. We still have some nice thrifty trees, etc.; dependable stock, which we offer you now at a bargain. Write and get our proposition. We can make it pay you. Send list of wants. Catalogue on application.

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# Seek No Further for Fruit Land

Focus your attention for a few moments upon BURBANK, the Columbia River's 13,000-acre irrigation project, now being opened to settlement and sale in small tracts on small yearly payments. Consider well its points of advantage, its guarantees of stability, the opportunity it offers the experienced fruit grower and the man of limited means searching for a fruit ranch home.

Study the picture and an ordinary map of the Northwestern states and you will see why BURBANK occupies one of the most extraordinary locations of any irrigated district in the West. At this point the famous Yakima and Snake River Valleys merge into the greater Columbia, giving rise to the apt phrase, "Heart of the Irrigated Northwest." It is the center of one of the richest fruit-growing sections in the world, surrounded by districts tried and true, and itself rapidly gaining a national reputation for its early fruits and berries. BURBANK is in the earliest fruit belt in the Northwest, thus giving it an extremely long growing season. Its strawberries are on the Pacific Coast markets first; its winter apples ripen latest.

The traffic of four great railroads, to say nothing of that of both the Snake and Columbia River steamer lines, flows past BURBANK. The Northern Pacific and the O. R. & N. cross these lands, while at the new town of BURBANK the North Coast Railroad is now building its \$1,000,000 bridge across the Columbia, thus giving the project three transcontinental railroads. Just across the river is the North Bank road.

Do you know of a new irrigated district with three railroads across it, where no tract is more than three miles from a railroad?

This means quick, cheap shipping facilities (with water competition) to the large cities and best market centers of the Coast and mining and lumber regions. IT MEANS OVERNIGHT MARKETS AND TOP PRICES. It means that the man of small means can get QUICK RESULTS from his little ranch. Figure it out and you will agree with us.

These high bench lands, perfectly drained, level and sightly, rich Columbia Valley soil, provided with abundant, perpetual water rights, whose irrigation system is COMPLETED AND READY FOR USE, we are selling in small tracts at \$175 to \$250 an acre on easy yearly payments. These, however, are opening prices and will not last.

Burbank offers today a rare opportunity in low-priced, high-grade fruit lands. It will pay you well to investigate.

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ILLUSTRATED BOOKLET AND LITHOGRAPH MAP IN FIVE COLORS FREE

Northwest. The greater our support, the larger our subscription list from every district, the better we will make "Better Fruit." We ask every friend of "Better Fruit" to say a good word for us and get a subscription whenever the opportunity presents itself. If every subscriber will send in one subscription during the year we can double our subscription list before 1911.

It is the harmony and united spirit of the great Northwest fruit industry that has made "Better Fruit" the best and handsomest fruit growers' journal in the world, of which all of our district are justly proud. The support of any two Northwestern states is not sufficient to maintain "Better Fruit" at its present high-class standard, therefore, we want and must have the support of the united Northwest.

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**A**SSOCIATE EDITORS.—We want to call the attention of every subscriber to the important additions to our editorial staff, which is very significant, indicating that the past liberal policy of "Better Fruit" will be more broad-minded and extensive than ever. We want every subscriber to look at the names that appear at the top of our editorial columns. The list was just completed as the last forms went to press and we regret it is too late to make the editorial announcement that we had intended to. We beg to advise our readers that this will follow in the next issue.

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**G**ERMANY'S IMPORTATIONS.—United States Consul-General Robt. B. Skinner, at Hamburg, reports the importation of fruit into Germany at an average of \$22,000,000 annually. It is his opinion that this amount will increase rapidly. Germany imported in 1898, \$22,491,000. The sad feature of it is, while German importations are thus increasing, the importations of fruit from the United States have decreased from 14,906 tons in 1905 to 4,325 in 1908. It is his opinion that too many intermediate firms are engaged in the business which are financially weak in both Germany and the United States, and he suggests that a co-operative society of the Pacific Coast fruit growers be incorporated with sufficient capital to handle the business direct, thus eliminating intermediate

profits and result in fruit being sold at reasonable retail prices instead of prohibitory figures. The attention of the readers of "Better Fruit" is called to an article previously written which appears in this issue on the subject of prohibitory prices.

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**C**OLORADO STATISTICS—Colorado is a great fruit producing state, one of the greatest fruit producing states west of the Mississippi River, and the output in 1909 was exceeded by only one state in the West, California. Some idea of the immensity of Colorado's resources can be obtained in the following statistics, compiled and published by the Railroad Red Book, Denver, Colorado:

Potatoes .....	\$ 5,989,000
Fruit .....	7,166,660
Beet sugar .....	12,000,000
Dairy products .....	30,000,000
Eggs and poultry .....	2,000,000
Hay and alfalfa .....	19,300,000
Honey .....	350,000
Wheat .....	10,277,500
Oats .....	4,290,375
Corn .....	2,543,500
Garden truck .....	10,000,000
Cattle .....	15,720,000
Hogs .....	5,631,000
Sheep .....	5,700,000
Horses and mules .....	6,130,000
Wool .....	2,100,000
Gold .....	23,730,946
Other metals .....	12,440,833
Coal .....	21,472,918
Stone .....	3,000,000
Oil .....	311,000
Manufactures, including smelters and reduction plants .....	215,000,000

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**K**ICKING—It is a slang word and we don't like it, but some things can only be accomplished in this way, and there is only one word in the American language that will fill the bill and that word is "kicking." We want every fruit grower to kick. We want him to kick hard. We want him to kick like a Missouri mule. Whenever a fruit grower or any of our friends go into a restaurant or hotel where they charge you more than ten cents for a baked apple with cream or a piece of apple pie, we want you to kick. An apple never cost the hotel or restaurant more than two cents, and sometimes not over a cent or a cent and a half. The hotel and restaurant man can well afford to put it on the bill of fare at ten cents. Yes, and even five cents. It should be done. If we can get every fruit grower to take up this subject and start the local papers on it, it will be taken up sooner or later by the big dailies, weeklies and month-

lies, because it is right, because our health demands that we eat fruit and the prices should not be prohibitory. Pause, Mr. Reader and Fruit Grower, and think what this means. Colonel Sellers Eyewater story isn't a circumstance. He said there were millions of people and everyone had sore eyes and everyone needed a bottle of Colonel Sellers Eyewater. There are eighty million people in the United States. If every one of them ate an apple three times a day, every day in the year, and they should, it would mean 876,000,000 bushels of apples that ought to be consumed. Figure it out for yourself and see if we are not right. It may sound like hot air. There is some poetry to it, but a whole lot of truth and good, common sense. ◆ ◆ ◆

**T**HE CONSUMPTION OF FRUIT—Last month the editor of "Better Fruit" gave a short talk before the Apple Club in the City of Portland, and among other features, touched upon over-production. We do not fear or believe in over-production. There may be such a thing as under-consumption. Over a year ago "Better Fruit" took up this subject editorially in several different editions, endeavoring to impress upon the fruit growers the importance of this subject. Under-consumption must come from high prices. Prices that are prohibitory. The price that the fruit grower gets is reasonable. The profit that the dealer or commission man makes generally is legitimate, but the price that the retailer demands and gets in many cases is exorbitant. While apples have sold in the Northwest net, F. O. B., for \$2.50 to \$3.35 per box, it is a well-known fact that the bulk of the crop of best varieties is sold at about \$2.00 per box. The freight on a box to

Parties desiring large tracts of land in Oregon or Washington for colonization or platting will do well to address J. A. Benson, Union Stock Yards, Portland, Oregon.

**T**HE factory of the Clarkston Box and Manufacturing Company, of Clarkston, Washington, will begin its season run on fruit boxes April 1. It is the most complete box factory in Southeastern Washington, and the equipment includes a new 1910 cleat machine that makes 60,000 per hour, two-color printing machine, nailing machines, shoo-tying machines, hand-holing machines, etc.

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*"WHERE LIFE IS WORTH WHILE"*

First class irrigated apple lands for sale at \$100.00 per acre and up

Apply for particulars to

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# HOOD RIVER

*the valley of*

## Apples and Strawberries



A TRAINLOAD OF APPLES EN ROUTE TO NEW YORK, PACKED BY HOOD RIVER APPLE GROWERS' UNION, SOLD TO STEINHARDT & KELLY FOR \$2.50 TO \$3.35 NET, F. O. B. HOOD RIVER

Hood River grows the finest apples and strawberries of any section in the wide, wide world, and commands the highest price. Excellent soil, grandest scenery, purest of mountain water, with 365 days a year filled with pleasure, work and happiness. A Hood River booklet will convince you.

ADDRESS

Secretary Commercial Club, Hood River, Oregon

Eastern cities is fifty cents; the commission man makes either 10 per cent, or, if he is a fruit buyer, he is entitled to more than this. Assuming that the commission man or wholesale fruit buyer makes fifty cents a box, which is fair and reasonable, it would mean that the apples would cost the retailer \$3.00 per box. As a matter of fact, the bulk of apples that are shipped from the Northwest are sold from about \$2.50 to \$3.50 per box, probably an average of \$3.00 per box delivered to the retailer in any city of the United States. The editor has investigated the subject very thoroughly, covering a period of two years, in various ways. The editor knows by correspondence that apples shipped from the various districts have been sold by retailers in large Eastern cities at seventy-five cents, \$1.00, \$1.25 and \$1.50 per dozen. We know this from our own people who have visited Eastern cities and paid these prices. It is not a question of opinion or inference. It is a question of fact. A friend of the editor paid \$1.50 per dozen for Hood River Spitzenergs in an Eastern city, size ninety-six to a box, which means eight dozen apples to a box, or \$12 per box retail for apples which cost about \$3.00 per box, making a profit of 300 per cent. We know of 128 apples to the box being sold at \$1.25 per dozen, which would be over \$12.50 per box, which cost the retailer less than \$3.00 per box. We might state a number of cases; however, these two are sufficient and can be verified by any fruit grower who cares to

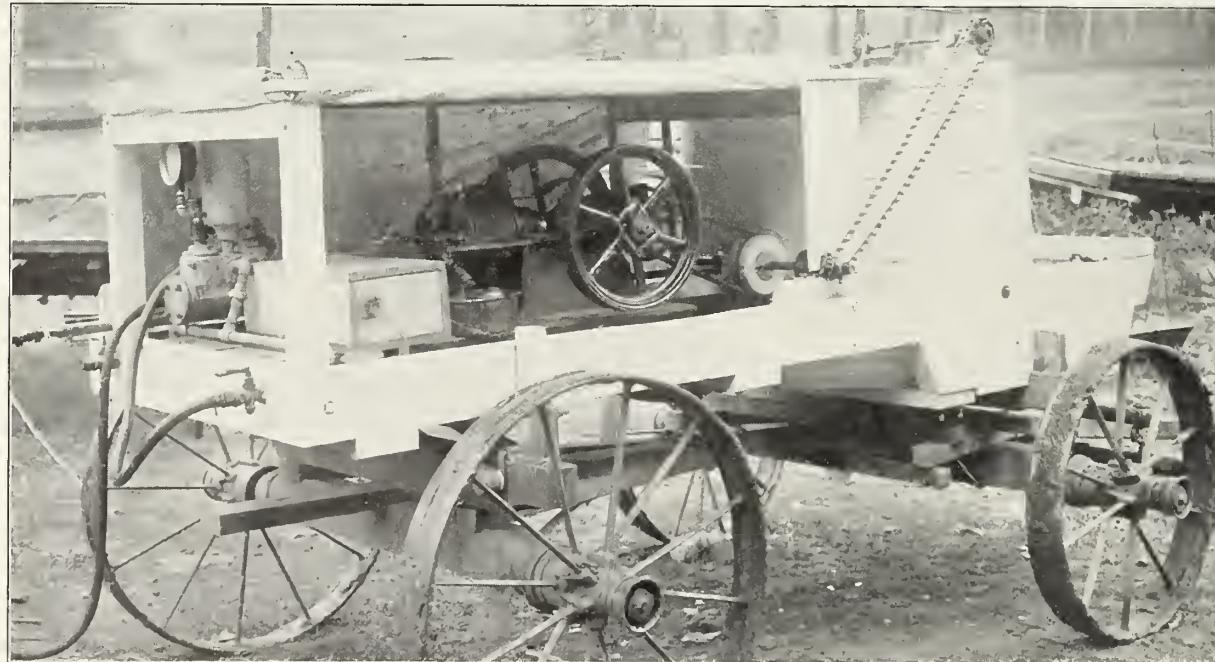
investigate the subject. This can be easily done by asking any friend living in the East to call on some of the fruit stands in the Great White Way, or even some smaller cities out of New York, and ask the price per dozen. A box containing 128 apples, or over ten dozen, could be sold at sixty cents per dozen, which would be \$6.00 per box, giving the retailer 100 per cent profit. The Lord knows this is a pretty big profit, because retail grocers do a profitable business on less than 20 per cent. The average profit in most lines of business will not exceed over 50 per cent, except in some luxuries. The fruit industry doesn't want fruit to become a luxury. It is a necessity and should be sold at a price that is not prohibitory. It should be sold at a price so that not only the rich, but every working man and family in the United States can buy a box of apples. Apples that cost the retailer \$3.00 should be retailed by the box at not to exceed 50 per cent profit, which would be \$4.50, and should be sold by the dozen at not to exceed sixty cents per dozen, which would be \$6.00 per box. "Better Fruit" is the first journal in America to take up this subject, which it did over a year ago, and we believe it the duty of every fruit grower in the country to see that every local paper takes it up until the wave of protest reaches from the Pacific to the Atlantic, invading every city, village, town and hamlet, and to use every means in his power to compel the retailers in the East to sell our fruit at a reasonable profit in order that the con-

sumption of fruit may be increased. Let us do everything in our power, not only for our own benefit but for the benefit of humanity, every working man and every poor family. Let us keep up the crusade in every way possible until we accomplish our purpose of compelling retailers to sell our fruit at a reasonable profit, at a figure which will enable the poor to buy it, and will add to their health and happiness. Such a campaign will increase the consumption of fruit to such an extent that a greater acreage will be necessary to supply the demand, which will mean that the industry will afford a living for a far greater number of people than are engaged in it at the present time. But better than all this, it will be better for all mankind.

♦ ♦ ♦

**THE COLORADO NATIONAL APPLE SHOW**—In this issue it is our aim to illustrate and describe the Colorado National Apple Show in the handsomest and best manner possible, sparing no expense in any detail. This issue contains several times as many illustrations of the Colorado National Apple Show as any other publication that we have seen to date. In addition, the matter in reference to the Colorado National Apple Show is not only more thorough but more complete and extensive, and we hope that this issue illustrating and describing the apple show will give those who were unable to attend the show some idea of its magnificence, its beauty, its grandness, its greatness and its significance.

## IDEAL SPRAY MACHINE



Planned and built at Hood River to meet the actual needs of the Hood River orchards. Ample capacity to do first-class work with a minimum weight. Price \$250.00. Hose and nozzles extra. For further information address

**D. McDONALD**

**HOOD RIVER, OREGON**

FEW PERSONS realize to what extent fungus troubles are robbing the fruit grower and farmer of the profits of his labor. The potato harvest is cut half in two if not protected, and sometimes entirely ruined. The fruit harvested is lacking in size, color, and smoothness. Consequently, apples of excellent flavor are sold to the cider mill, while apples that in quality are not fit for the cider mill command fancy prices because of their handsome appearance. Can we get this handsome appearance on Eastern-grown fruit? I have no hesitation in answering, "Yes." Experiments made in the East this past summer warrant my saying so.

I had the privilege of attending the National Apple Show at Spokane, Washington, last November, which was undoubtedly the greatest exhibition of beautiful apples that the world has ever seen. I had on exhibition some New York and West Virginia apples, which were equally highly colored as the same varieties grown in Washington and Oregon—just as smooth and perfect, and compared favorably in size. Many people suppose that there are certain climatic conditions in the West that are especially favorable to fruit. This is partly true. Climatic conditions were more favorable in the East thirty years ago than today. The increase in insect and fungus diseases has been discouraging to the most enthusiastic fruit growers, and many have fallen by the wayside. All of the newer fruit sections are freer from these draw-backs, but time will more or less equalize these conditions. The ever increasing demand for quality fruit and vegetables is calling for beauty as well as flavor, and fungus diseases do more than anything else to rob fruit of its lustre and bloom so pleasing to the eye, and for which the public are paying a disproportionately high price.

Fungi, in plain English, is one of the lowest groups of plant life, and those we have to deal with mostly on fruit and vegetables are parasites (microscopic in size), some of which attack cuts or wounds such as are made by insects, or bruises from careless handling or packing; yet other forms of fungi will attack healthy plant life, boring their way through the healthy tissues. Heat and moisture are very favorable to their growth and spread, yet some forms are more abundant in cool seasons. It will thus be seen that fungi are of innumerable forms, attacking when and where least expected. This makes it a most dangerous enemy. It is like combatting a contagious disease which we cannot see, and know it only by the results.

But the grower need not be discouraged, for an immense amount of work has been and is being done along these lines by both our national and state governments, as well as chemists connected with commercial houses, and the experiments made in this past year have been exceedingly gratifying. You will appreciate the difficulty when you understand that fungus is one plant growing on another, and a remedy must be found that will kill one without injury to the other. This has been the difficulty with the old bordeaux mixture, that in killing the fungi, the little plant cells on both leaf and fruit are often injured.

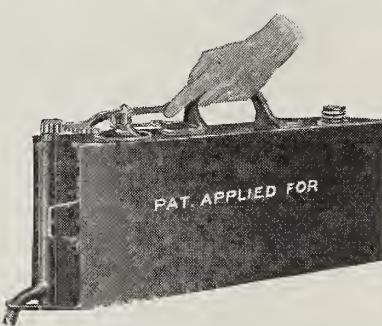
Scientists have long believed that some form of sulphur other than the copper sulphate would destroy fungi without injury to the fruit and vegetable. This past season experiments were made with self-boiled lime-sulphur, commercial lime-sulphur, iron sulphate, etc., and each experimenter advocates most strongly his own preparation. We believe that the most promising of these preparations was experimented with last year under the name of "Sulfocide," containing actually between 29 and 30 per cent of sulphur in solution, admitting of a great dilution; and in every instance where tried as a substitute for bordeaux mixture, it has far surpassed it in effectiveness with no injury. Whether it can be used on peach and plum will be a matter of future experiment, but the fact that with less trouble and expense it can be used where bordeaux has been the only remedy is very encouraging, and makes it worthy of a trial.

B. C. Pratt.

◆ ◆ ◆

RAPID LIGHTER—For use in lighting smudge pots in orchard heating. This can holds one gallon of gasoline and is carried in the left hand, while a torch is carried in the right. The torch handle can be so constructed as to quickly knock or pull off the cover of the previously filled oil pot, then with the index finger move the spring-acting lever on top of the gasoline can, over the

smudge oil pot, and instantly there drops a thimbleful of gasoline. Apply the torch to the dropped gasoline, which ignites and in every case starts the gas and fire in the smudge oil, and off you go to the next pot. It requires less than one-sixteenth of a second to drop the gasoline and fire each



smudge pot. In fact, if running, you will hardly come to a full stop at each pot. One gallon of gasoline will be enough to light more than 800 pots. The saving of time is enormous, also the saving of labor and material. The mechanism is so constructed that it drops just so much gasoline for each manipulation of the lever, no more, no less. It is impossible to have an explosion in case the torch and gasoline can come in contact. It is durable; all the mechanism is made of brass, so it will not rust or corrode, and every can is guaranteed. Price \$4. Address John Steel, 544 Brandeis building, Omaha, Nebraska. References: First National and United States National Banks of Omaha and the Commercial Club of Omaha.

◆ ◆ ◆

SAVE YOUR MONEY AS WELL AS YOUR Fruit.—Expense for heating 20 acres, when coal costs \$3 per ton and oil 5 cents per gallon: Oil, first year—Tank and cistern, \$240; 1,000 oil pots, \$450; 7,000 gallons of oil at 5 cents, \$350; waste for lighting, \$5; total, \$1,045. Oil, second year—7,000 gallons of oil at 5 cents, \$350; waste for lighting, \$5; total, \$355. Coal, first year—1,000 coal pots, \$350; coal house, \$25; 40 tons of coal, \$120; kindlings and waste, \$15; total, \$510. Coal, second year—40 tons coal, \$120; kindling and waste, \$15; total, \$135. Saving first year, \$535; saving second year, \$220. We invite you to become one of the hundreds of growers who will use Ideals this year; 56,000 Ideals used with success in 1909. The Ideal Orchard Heater Company, Grand Junction, Colorado.

◆ ◆ ◆

PLANET JR. AND PROSPERITY.—The farmer by virtue of his vocation is admittedly one of the most independent of the world's producers. In fact, most every line of trade is dependent directly or indirectly on the farmer. This has come to be truer than ever since the dawn of the new kind of farm implements which have worked

### Prosperous Shoe Business FOR SALE

Or in Exchange for an Apple Bearing Farm

A well established and prosperous cash shoe business in best city in Western Pennsylvania—Beaver Falls, Pennsylvania. Population 17,000. Fine schools and celebrated Geneva College. Nice residence town; 30,000 population all told to draw upon for trade. Clean stock of \$10,000 and good lease. Business will clear \$3,000 above expenses, or 30 per cent upon investment. Easy business to learn. Bank references. Will sell for cash or exchange for improved bearing apple farm. Don't quote any inflated price that won't stand personal investigation, as this business is a bona fide one and will prove up better than stated. If interested give full particulars, age of trees and kind of fruit, land, location, buildings, etc. This is where one good thing will have to be exchanged for the other, or otherwise a cash sale. Write

C. A. CURL, Beaver Falls, Pennsylvania

such a revolution in farming methods toward increased production. These wonderful new implements, such as the Planet Jr. farm and garden tools, have enabled the progressive market gardener to treble his output and then double it again. For instance, the No. 6 Planet Jr.—the newest combination hill and drill seeder, wheel hoe, cultivator and plow—does the work of six men. That means where a crop of certain size was formerly cultivated, six times the crop can now be taken care of with the same amount of labor in the same time, for this handy garden tool opens the furrow, sows any kind of garden seed accurately in drills or hills, covers, rolls down, and marks out the next row—all at one operation. In addition to this it is also a perfect wheel hoe, cultivator and plow. This is only one example of the increased efficiency the 55 kinds of Planet Jr. tools have given to this class of the world's workers. So that when the depression of 1907 "depressed" almost every man of affairs, the Planet Jr. user was "there with the goods" just the same as usual, gathering in his profits and adding to his "rainy day" pile instead of drawing upon it. This ought to be an object lesson to every tiller of the soil, and prompt him to write to S. L. Allen & Co., Box 1106U, Philadelphia, Pennsylvania, for their new illustrated catalogue of 1910 Planet Jr. implements, which they will send free upon request.



### MARKET YOUR FRUIT WITH ANY OF THESE BUYERS

#### EASTERN BUYERS

Gibson Fruit Company, Chicago; H. Woods Company, Chicago; Steinhardt & Kelly, New York; E. P. Loomis & Co., New York; D. Crossley & Sons, New York; Rae & Hatfield, New York; Appel & Uffy, New Orleans; J. Grainger & Co., Lincoln, Nebraska; O. C. Evans & Co., Kansas City, Missouri; G. M. H. Wagner & Sons, Chicago; R. G. Murdoch & Co., Chicago; Sgobell & Day, New York; Robert T. Cochran Company, New York; Alfred W. Otis, Boston; Crutchfield & Woolfolk, Pittsburgh; Ryan & Virden Company, Butte, Montana; Lindsay & Co., Helena, Great Falls and Billings, Montana; Lawrence Hensley Fruit Company, Denver; John H. Simon, Philadelphia; W. C. Deyo & Bros., New York; Palmer Company, Sioux City, Iowa; The B. Presley Company, St. Paul; The Lagomarcino-Grupe Company, Burlington, Davenport, Cedar Rapids, Ottumwa, Creston, Dubuque and Clinton, Iowa; F. S. Timberlake, St. Louis; The Lewis-Vidger-Loomis Company, Fargo, North Dakota; O. W. Butts, Omaha.

#### WESTERN BUYERS

Davenport Bros., Pearson, Page & Co., McEwen & Koskey, Mark Levy, Bell & Co., Levy & Spiegel, W. B. Glafke & Co., Dryer, Bollam Company, Portland Brokerage Company, Portland, Oregon; Ryan & Newton, Spokane, Washington; Davidson Fruit Company, Hood River, Oregon; Richey & Gilbert, Toppenish, Washington; Gordon & Co., Seattle Fruit & Produce Auction Company, Ryan Brokerage Company, Seattle, Washington; Nelson Fruit Company, Paonia, Colorado.

## 1,000,000 Strawberry Plants Clark's Seedling

THE KIND THAT MADE  
HOOD RIVER FAMOUS

Rates:

100 plants \$1.25  
1,000 plants 5.00  
5,000 to 10,000 plants at  
\$3.00 per thousand  
Large orders at special prices

THE QUALITY OF OUR  
PLANTS IS THE BEST

E. L. KLEMER  
Hood River, Oregon

## I NEED \$4000 CASH AT ONCE

WILL SACRIFICE MY RANCH TO RAISE THE MONEY

10 ACRES in the heart of Yakima Valley; splendid location; 5 acres planted to apple orchard containing the best commercial varieties—Spitzenbergs, Yellow Newtown Pippins and Jonathans; 3 acres of timothy and clover, 1 acre of pasture; 5-room bungalow; horse, colt and all implements. Where, in Yakima Valley, can you buy a bearing orchard for \$800 per acre? Easy terms. For full description write owner.

R. B. YOUMANS

Sillman Hotel, Spokane, Washington

## PRIZE-WINNERS AT COLORADO APPLE EXPOSITION

## DIVISION I—COMMERCIAL PACK.

Class A, Carload Lots—First prize, Grand Junction Fruit Growers Association, Grand Junction; second prize, Fruita Fruit & Produce Association, Fruita; third prize, Nelson Brothers Fruit Company, Paonia; best car Missouri Pippin, North Fork Fruit Growers Association, Paonia.

Class B, Ten-Box Pack—First prize, Round Crest Fruit Company, Canon City; second prize, Grand Junction Fruit Growers' Association, Grand Junction; third prize, Paonia Fruit Exchange Company, Paonia.

Class BB, Ten-Box Pack—First prize, Ellsworth France, Wenatchee, Washington; second prize, Newton B. King, Canon City; third prize, L. H. Titchenal, Cashmere, Washington.

Class C, Five-Box Pack—First prize, L. H. Titchenal, Cashmere, Washington; second prize, J. M. Burkhardt, Paonia; third prize, J. A. Green, Grand Junction.

Class D, One-Box Pack—First prize, L. H. Titchenal, Cashmere, Washington; second prize, J. M. Burkhardt, Paonia.

Class E, One-Box Pack (Fall)—First prize, W. R. Haines, Grand Junction; second prize, A. W. Hines, Grand Junction.

Sweepstakes for an Individual—A. B. Stodart, Jr., Grand Junction.

Sweepstakes for an Association—Grand Junction Fruit Growers' Association.

## DIVISION II—FANCY PACK.

Class A, Ten-Box Pack—First prize, Ellsworth France, Wenatchee, Washington; second prize, P. B. Gates, Dolores; third prize, L. H. Titchenal, Cashmere, Washington.

Class B, Five-Box—First Prize, Ellsworth France, Wenatchee, Washington; second prize, L. H. Titchenal, Cashmere, Washington.

Class C, One Box—First prize, Ellsworth France, Wenatchee, Washington; second prize, W. R. Haines, Grand Junction.

California Pine Box Company Special—(Additional Prizes for Division II).

Class A—Ellsworth France, Wenatchee, Washington.

Class B—Ellsworth France, Wenatchee, Washington.

Class C—Ellsworth France, Wenatchee, Washington.

## DIVISION III—BEST ONE BARREL.

Class B—First prize, L. G. Edwards, Peru, Nebraska; second prize, not awarded.

## DIVISION IV—DISTRICT DISPLAYS.

First prize, Grand Junction Fruit Growers' Association; second prize, Surface Creek District.

## DIVISION V—LARGE FRUIT.

Class A, Pyramid—First prize, Gertrude Park, Silt; second prize, H. R. Spencer, Montrose.

Class B, Largest Apple—First prize, C. H. McHenry, Farmington, New Mexico; second prize, State of Maryland.

## DIVISION VI—IMPROVED PACKAGE.

First prize, Surface Creek District; second prize, H. Brigham, Jr., Cortez.

## DIVISION IX—PEAR SPECIAL.

First prize, Gertrude Park, Silt.

## DIVISION X—INDIVIDUAL SPECIAL.

First prize, J. W. Murphy, Glenwood, Iowa; second prize, Fred Benham, Grand Rapids, Michigan.

## DIVISION XI—STATE SPECIAL.

First prize, San Juan County, New Mexico; second prize, F. A. Hahn Company, Santa Cruz, California.

## DIVISION XII—PACKING DEMONSTRATION.

First prize, Peter Jackson, Denver; second prize, George Sykes, Chicago.

## DIVISION XIII—PHOTOGRAPHIC.

Class A—First, Geo. L. Beam, Denver; second, Denver Reservoir & Irrigation Company, Denver; third, Boulder County.

Class B—First, Geo. L. Beam, Denver; second, Denver Reservoir & Irrigation Company, Denver; third, Boulder County.

Class C—First, Frank E. Dean, Grand Junction; second, F. Y. Moseley, Loveland; third, not awarded.

Class D—First, Boulder County; second, Frank E. Dean, Grand Junction; third, B. F. Rockefellow, Canon City.

Class E—First, Chas. Boynton, Longmont; second, F. Y. Moseley, Loveland; third, Frank E. Dean, Grand Junction.

Class F—First, Denver Reservoir & Irrigation Company, Denver; second, not awarded; third, not awarded.

Class G—First, Frank E. Dean, Grand Junction; second, Denver Reservoir & Irrigation Company, Denver; third, Geo. L. Beam, Denver.

Class H—First, Denver Reservoir & Irrigation Company, Denver; second, Frank E. Dean, Grand Junction; third, not awarded.

Class I—First, Geo. L. Beam, Denver; second, Frank E. Dean, Grand Junction; third, not awarded.

Class J—First, F. E. Dean, Grand Junction; second, Geo. L. Beam, Denver; third, not awarded.

Sweepstakes—First, Frank E. Dean, Grand Junction; second, F. Y. Moseley, Loveland.

## DIVISION XV—HOME-MADE BY-PRODUCTS.

Class A—First, Tobias Mattox, Greeley; second, Mrs. M. E. Snow, Canon City; third, Mrs. D. S. Moore, Canon City.

Class B—First, G. A. Klaiber, Longmont; second, Mrs. D. S. Moore, Canon City; third, Chas. H. Dixon, Cory.

Class C—First, Mrs. Alice Wyman, Paonia; second, Mrs. S. D. Moore, Canon City; third, Mrs. Herbert P. Johnson, Cedaredge.

Class D—Second, Mrs. Alice Wyman, Paonia. Class E—First, Mrs. S. D. Moore, Canon City; second, Mrs. M. E. Snow, Canon City; third, Mrs. Alice Wyman, Paonia.

Class F—First, Mrs. M. E. Snow, Canon City; second, Mrs. D. S. Moore, Canon City; third, Mrs. Alice Wyman, Paonia.

Class G—First, Mrs. D. S. Moore, Canon City; second, Mrs. Alice Wyman, Paonia.

Class H—First, Mrs. M. E. Snow, Canon City; second, Boulder County; third, W. T. Bozman, Cortez.

Sweepstakes—Mrs. D. S. Moore, Canon City.

## DIVISION XVI—FACTORY-MADE BY-PRODUCTS.

Class B—First, The Orchard Products Company, Denver.

Class C—First, The Orchard Products Company, Denver.

Class D—First, The Orchard Products Company, Denver.

Class E—First, The Orchard Products Company, Denver.

Class F—First, The Paonia Exchange Company, Paonia.

Class G—First, The Paonia Fruit Exchange Company, Paonia.

Class H—First, The Paonia Fruit Exchange Company, Paonia.

Class I, Sweepstakes—First, The Paonia Fruit Exchange Company, Paonia; second, The Orchard Products Company, Denver.

## DIVISION XVII—PLATE EXHIBITS.

Class 1, Dutchess of Old—First, F. O. Harrington, Williamsburg, Iowa; second, J. W. Murphy, Glenwood, Iowa; third, not awarded.

Class 2, Sop of Wine—First and second, not awarded; third, Fred Benham, Grand Rapids, Michigan.

Class 3, Red June—No prizes awarded.

Class 4, Bailey Sweet—First, not awarded; second, Boulder County; third, not awarded.

Class 5, Wealthy—First, F. O. Harrington, Williamsburg, Iowa; second, J. W. Murphy, Glenwood, Iowa; third, Boulder County.

Class 6, Maiden Blush—First, J. W. Murphy, Glenwood, Iowa; second, boulder County; third, not awarded.

Class 7, Buckingham—First, not awarded; second, Boulder County; third, not awarded.

## 160 Acres Southern Oregon FRUIT LAND

Eleven miles from Grants Pass, 1 1/4 miles from Wilderville, on Grants Pass and Crescent City stage road. Small house and barn; 4 acres cleared; permanent running water; 700,000 feet saw timber; 80 acres second bench red land, especially adapted to fruit. Price \$1,650.

JOHN H. ROBINSON

R. F. D. No. 2 Grants Pass, Oregon

## GOVERNMENT Irrigated Land

Cheap fruit, dairy and alfalfa lands. Best and cheapest water right in the West. Excellent business opportunities. Cheap power for manufacturing purposes. Address

GILBERT E. BRINTON  
REALTY CO.

Heyburn, Idaho

## FOR SALE

Near Underwood, Washington, in the Hood River fruit belt, 100 acres very best fruit land, including about 7 acres in apples, trees mostly in bearing, all commercial varieties, and about 4 acres peach trees, six years old, in full bearing; should produce 4,000 boxes this year. This is an ideal fruit farm, with good buildings, plenty of water piped to house and barn; on county road; one-quarter mile to good school, one and one-half miles to town, railroad depot, steamboat landing on Columbia River. This property should double its present value within the next few years. For particulars address owners.

Keeley & DuBois  
UNDERWOOD, WASHINGTON

## Cupid Flour

Has same standing in the Flour trade that Hood River Apples have in the Fruit trade.

MADE BY  
HOOD RIVER  
MILLING CO.

## S. E. Bartmess

UNDERTAKER AND  
LICENSED EMBALMER

For Oregon and Washington

Furniture, Rugs, Carpets  
and Building Material

Hood River, Oregon



## BETTER FRUIT

Class 8, McMahon White—First, J. W. Murphy, Glenwood, Iowa; second, Boulder County; third, not awarded.

Class 9, Utters Red—First, E. A. Fleming, Silt; second, Gertrude Park, Silt; third, S. A. Fleming, Silt.

Class 10, Alexander—First, J. W. Murphy, Glenwood, Iowa; second, Chas. H. Dixon, Cory; third, F. O. Harrington, Williamsburg, Iowa.

Class 11, Haas—First, Gertrude Park, Silt; second, G. A. Klaiber, Longmont; third, Boulder County.

Class 12, Pewaukee—First, S. A. Fleming, Silt; second, E. A. Fleming, Silt; third, W. S. Park, Silt.

Class 13, Bietigheimer—No prizes awarded.

Class 14-20, Ounce Pippin—First, J. W. Murphy, Glenwood, Iowa; second, F. O. Harrington, Williamsburg, Iowa; third, not awarded.

Class 15, Tolman Sweet—First, Fred Benham, Grand Rapids, Michigan; second, H. R. Spencer, Montrose; third, Boulder County.

Class 16, Golden Russets—First, Fred Benham, Grand Rapids, Michigan; second, A. W. Hice, Paonia; third, not awarded.

Class 17, Lowell—First, not awarded; second, E. D. Smith, Cedaredge; third, not awarded.

Class 18, McIntosh—No prizes awarded.

Class 19, Wolf River—First, Harvey Hall, Paonia; second, Ashbaugh Brothers, Cortez; third, Boulder County.

Class 20, Yellow Bellflower—First, State of Maryland; second, F. A. Hahn Company, Santa Cruz, California; third, J. B. Ratokin, Austin.

Class 21, Fameuse—First, F. S. Carman, Grand Junction; second, W. C. Knight, Grand Junction; third, E. A. Fleming, Silt.

Class 22, Ortley—First, G. P. Broughton, Montrose; second, Mrs. Bessie Broughton, Montrose; third, A. W. Hice, Paonia.

Class 23, Rambo—First, Boulder County; second, W. N. Kinnicott, Cory; third, Wm. Kehmeir, Eckert.

Class 24, Yellow Transparent—No prizes were awarded.

Class 25, Strawberry—First, not awarded; second, H. R. Spencer, Montrose; third, not awarded.

DIVISION XVIII—PLATE EXHIBITS,  
WINTER VARIETIES.

Class 1, Rome Beauty—First, Austin E. Miller, Austin; second, T. J. Harshman, Cory; third, William Cox, Grand Junction.

Class 2, Stark—First, A. C. Newton, Grand Junction; second, S. A. Fleming, Silt; third, J. E. Thomas, Antlers.

Class 3, Scotts Winter—First, E. A. Fleming, Silt; second, W. N. Kinnicott, Cory; third, S. A. Fleming, Silt.

Class 4, Winter Banana—First, Chas. H. Dixon, Cory; second, Guy H. Dixon, Cory; third, T. J. Harshman, Cory.

Class 5, Stayman Winesap—First, A. B. Stoddart, Jr., Grand Junction; second, F. O. Harrington, Williamsburg, Iowa; third, J. W. Murphy, Glenwood, Iowa.

Class 6, Black Ben Davis—First, E. E. Bull, Austin; second, F. O. Harrington, Williamsburg, Iowa; third, C. C. Agnew, Grand Junction.

Class 7, Gano—First, Austin E. Miller, Austin; second, Nelson Brothers Fruit Company, Paonia; third, R. E. Griffin, Austin.

Class 8, Ben Davis—First, F. S. Carman, Grand Junction; second, B. A. Smith, Grand Junction; third, O. M. Forry, Grand Junction.

Class 9, Jonathan—First, Austin E. Miller, Austin; second, A. M. Niles, Olathe; third, A. W. Hice, Paonia.

Class 10, Winesap—First, W. S. Carman, Grand Junction; second, W. S. Chandler, Grand Junction; third, J. W. Wetterick, Cedaredge.

Class 11, Paragon—First, State of Maryland; second, Fremont County Horticultural Society, Canon City; third, Edgar Wilkinson, Delta.

Class 12, York Imperial—First, State of Maryland; second, Geo. Graham, Paonia; third, Coy E. Klinger, Grand Junction.

Class 13, Missouri Pippin—First, F. S. Carman, Grand Junction; second, C. G. Smith, Palisade; third, The Palisade Fruit & Land Company.

Class 14, Hoover—First, W. T. Bozman, Cortez; second, J. D. Hall, Dolores; third, not awarded.

Class 15, Grimes Golden—First, F. J. Harshman, Cory; second, J. P. Cladwell, Cedaredge; third, E. D. Smith, Cedaredge.

Class 16, Smith Cider—First, F. S. Carman, Grand Junction; second, R. B. Cassels, Grand Junction; third, J. A. Luellen, Eckert.

Class 18, Willow Twig—First, F. S. Carman, Grand Junction; second, W. T. Bozman, Cortez; third, A. W. Hice, Paonia.

Class 19, Rhode Island Greening—First, G. H. Webb, Cedaredge; second, Walter James, Rifle; third, Mrs. J. B. Malone, Rifle.

Class 20, Lawlor—First, F. S. Carman, Grand Junction; second, B. A. Smith, Grand Junction; third, T. J. Harshman, Cory.

Class 21, Yellow Newton—First, Western Oregon Orchards Company; second, Chas. Lamb, Clifton; third, W. S. Chandler, Grand Junction.

Class 22, White Winter Pearmain—First, W. N. Kinnicott, Cory; second, A. C. Newton, Grand Junction; third, Austin E. Miller, Austin.

Class 23, Baldwin—First, M. E. Snow, Canon City; second, Gross & Anderson, York, Pennsylvania; third, State of Maryland.

Class 24, Walbridge—First, John G. Wetterick, Cedaredge; second, A. C. Newton, Grand Junction; third, Samuel White, Cory.

Class 25, Northern Spy—First, Mrs. Arthur King, Eckert; second, Guy H. Dixon, Cory; third, Round Crest Fruit Company, Canon City.

Class 26, Wagner—First, J. K. Johnston, Montrose; second, J. W. Murphy, Glenwood, Iowa; third, H. R. Spencer, Montrose.

Class 27, Arkansas Black—First, Coy E. Klinger, Cory; second, F. S. Carman, Grand Junction; third, L. A. David, Austin.

Special Prize (Class 27), \$8 for large and uniform size and color, Ellsworth France, Wenatchee, Washington.

Class 28, Dominie—First, not awarded; second, S. A. Fleming, Silt; third, F. O. Harrington, Williamsburg, Iowa.

Class 29, N. W. Greening—First, J. A. Luellen, Eckert; second, G. W. Webb, Cedaredge; third, P. B. Gates, Dolores.

Class 30, Minkler—First, F. S. Carman, Grand Junction; second, A. C. Newton, Grand Junction; third, W. N. Kinnicott, Cory.

Class 31, Spitzenberg—First, Oliver Rogers, Grand Junction; second, Chas. Lamb, Clifton; third, S. A. Fleming, Silt.

Class 32, Fallawater—First, Gross & Anderson, York, Pennsylvania; second, H. R. Spencer, Montrose; third, not awarded.

## Get An Expert's Opinion Before You Buy

I have no land to sell, nor am I interested in any real estate firm. My business is giving expert advice on the land you contemplate buying, or on your work in the orchard.

Would you obligate yourself for ten thousand dollars without consulting a lawyer?

Then why buy valuable land without obtaining the opinion of a trustworthy expert?

I am a graduate of the Cornell College of Agriculture

And have a thorough knowledge of conditions prevailing in the valley, and a vast experience in rendering expert opinions.

Advice on pruning, diseases and other topics rendered. Write or call me up before buying.

J. L. ROBERTS, B. S. A.

HOOD RIVER, OREGON

Newtown  
Spitzenberg  
Winesap

And all the leading varieties of apples still in stock.

Stock is being rapidly depleted and orders should be placed early.

Yakima Valley Nursery Co.

North Yakima, Washington

Office 9 Clogg Bldg. Catalog

## IRRIGATED LAND

The greatest fruit and alfalfa valley in America is now open for settlement at Fort Stockton, Texas; rich alluvial; natural flow of pure spring water exceeding 56,000,000 gallons per day for irrigation and domestic use; water on land now. Assured profits of from \$100 to \$1,000 per acre. No drought, no crop failures; finest all year round climate in the United States; altitude 3,050 feet above sea level. Fort Stockton is the county seat of Pecos County and an important division point on the Kansas City, Mexico & Orient Railway, now under construction. Population now 1,000; will soon be a city of from 10,000 to 15,000. Greater opportunities for homeseekers and investors than were ever offered in the older irrigated districts, where orchards are valued at from \$2,000 to \$5,000 per acre. Choice locations open to those who investigate now. You cannot afford to buy land anywhere without seeing Fort Stockton. For full information address

Fort Stockton Irrigated Land Co.  
303 Fidelity Trust Building, Kansas City, Mo.

## FINE RANCH

IN THE

## Famous Rogue River Valley

The land of the best pears, apples, peaches and Tokay grapes. \$15,000, balance on time, will handle 201 acres with river frontage, with about 27 acres in 12 and 2-year-old orchards; 5 miles from railroad; fine roads, fine water rights and irrigation; boating and fishing on place. For maps and information address

Box 23, care "Better Fruit"

Hood River, Oregon

## Choice Fruit Land

Yakima and Benton Counties  
Washington

AT WHOLESALE  
(Price of wheat lands)

Yakima Realty and  
Investment Co.

12 East Yakima Ave., North Yakima, Wash.  
805 Third Ave., Seattle, Wash.  
317-319 Palace Bldg., Minneapolis, Minn.

## Upper Hood River Valley

Cheap and the best of land. Plenty of water for irrigation at low rates. Good transportation facilities. You are cordially invited to see what I have done at my home in six years. I handle these lands.

W. H. MARSHALL

Dee, Oregon In Hood River Valley

BANANAS  
STRAWBERRIESTHE  
Humphreys  
Commission Co.

Wholesale Foreign and Domestic  
FRUITS AND PRODUCE

1516-22 Market Street  
DENVER, COLORADO

WE HAVE

# Apple Lands

That MEET EVERY REQUIREMENT  
OF THE BEST INFORMED MEN ON  
APPLE CULTURE IN OREGON

## *The Right Soil*

- Proper altitude
- Perfect air drainage
- Humid belt
- Correct water drainage

We are selling these lands, planted to approved apple trees and cared for one or more years, for

**\$250 Per Acre**

ONE-FIFTH DOWN  
and TWO per cent per month

We want a live business-producing man in each community to close these contracts. If you are such a man your customers will come to you, and a closer can make big income. Our contract is the most liberal offered, has all saving features and pleases everybody.

Write us who you are, what you are doing, what you have done before, if you are a prospective customer yourself, and, if your standing in business is O. K., we can do business.

### ADDRESS

**Oregon Apple Orchards Co.**

804-5 Lewis Building

PORLAND, OREGON

# CHEHALEM MOUNTAIN ORCHARDS

## *One Thousand Acres*

Of choicest orchards, subdivided in five and ten-acre tracts, planted to commercial varieties of apples, pears, cherries and walnuts and taken care of for a period of five years or longer if desired. The leading horticulturists of Oregon speak in the highest terms of this land as to the adaptability of its soil and location for orcharding, especially to its elevation above the sea level and frost belt.

## *See Their Letters in Our Office*

In regard to convenience for marketing and communication with Portland, study our booklet, containing map of the Willamette Valley from Portland to Salem, which will be mailed upon request to any address free of charge. Orchards located in the foothills of Chehalem Mountains

## *15 to 17 Miles Southwest of Portland*

Connected by the Southern Pacific Railroad, with two stations, Rex and Frank, on the land. The Oregon Electric Railroad, now in course of construction, will be in operation in a few months and will traverse our property. For prices and full particulars call at office. Easy terms of

**10 PER CENT CASH  
\$15 PER MONTH**

Or liberal discount for cash. Select your tract at earliest opportunity, while you have first choice.

I am interested in your orchard land. Please send me your booklet.

Name .....

Address .....

# The Crossley Co.

Rooms 708-709 Corbett Building  
PORTLAND, OREGON

Class 33, Black Twig—First, F. S. Carman, Grand Junction; second, R. B. Cassels, Grand Junction; third, Fremont County Horticultural Society, Canon City.

Class 34, Delicious—First, J. W. Murphy, Glenwood, Iowa; second, F. O. Harrington, Williamsburg, Iowa; third, H. Scheusner, Lebanon, Colorado.

Class 35, Tompkins King—First, Gross & Anderson, York, Pennsylvania; second, Fred Benham, Grand Rapids, Michigan; third, not awarded.

Class 36, Senator—First, F. S. Carman, Grand Junction; second, Ray W. Hesseltine, Peru, Nebraska; third, J. H. & W. E. Kellogg, Hotchkiss.

Class 37, King David—First, not awarded; second, J. W. Murphy, Glenwood, Iowa; third, F. O. Harrington, Williamsburg, Iowa.

Class 38, Smokehouse—First, not awarded; second, David L. Beezley, Paonia; third, Fred Benham, Grand Rapids, Michigan.

Class 39, Lsham Sweet—No prizes awarded.

Class 40, Foulton—First, F. O. Harrington, Williamsburg, Iowa; second, J. W. Murphy, Glenwood, Iowa; third, not awarded.

Class 41, Romanite—First, S. A. Fleming, Silt; second, E. S. Fleming, Silt; third, Gertrude Park, Silt.

Class 42, Striped Sweet Pippin—First, J. D. Hall, Dolores; second, W. T. Bozman, Cortez; third, not awarded.

Class 43, Flora Bell—First, G. H. Webb, Cedar-edge; second and third, not awarded.

Class 44, Red Pearmain—First, J. D. Hall, Dolores; second, W. T. Bozman, Cortez; third, not awarded.

Class 45, Kinnard's Choice—First, State of Maryland; second, Fred Benham, Grand Rapids, Michigan; third, J. W. Murphy, Glenwood, Iowa.

#### SPECIAL PLATES—NOT LISTED.

Hoover—First, Monitor Orchard Company, Medford, Oregon; second and third, not awarded.

Huntsman—First, J. W. Murphy, Glenwood, Iowa; second, F. O. Harrington, Williamsburg, Iowa; third, Round Crest Fruit Company, Canon City.

Bismarck—First, E. A. Fleming, Silt; second, S. A. Fleming, Silt; third, not awarded.

Mann—First, F. S. Carman, Grand Junction; second, J. W. Murphy, Glenwood, Iowa; third, H. R. Spencer, Montrose.

Basket—First, E. A. Fleming, Silt; second, W. S. Park, Silt; third, not awarded.

Colorado Orange—First, Round Crest Fruit Company, Canon City; second, G. R. Spencer, Montrose; third, M. E. Snow, Canon City.

Apple of Commerce—First, Julius Wicke, Hotchkiss; second, William Wicke, Hotchkiss; third, not awarded.

#### DIVISION XIX.

Merrimac Chemical Company Special—For best five boxes of apples sprayed with Swift's arsenate of lead, Austin E. Miller, Austin.

#### DIVISION XX.

Stark Brothers Nursery Special: Class A—First, J. W. Murphy, Glenwood, Iowa; variety, Delicious.

Class B—First, J. W. Murphy, Glenwood, Iowa; variety, King David.

Class C—First, J. W. Murphy, Glenwood, Iowa; variety, Black Ben Davis.

Class D—First, J. W. Murphy, Glenwood, Iowa; variety, Delicious.

Class E—First, J. W. Murphy, Glenwood, Iowa; variety, King David.

Class F—First, F. S. Carman, Grand Junction; variety, Senator.

Class G—First, Geo. LaGrange, Grand Junction; variety, Stayman Winesap.

Class H—First, E. A. Johnson, Grand Junction; variety, Roman Beauty.

Sweepstakes—Best display of King David, Senator, Black Ben Davis, Stayman Winesap, Rome Beauty and Jonathan, J. W. Murphy, Glenwood, Iowa.

Special on Seedling—Red Bird, Mr. Conklin, Grand Travers, Michigan.

#### DIVISION XXI.

S. L. Allen & Company Special—For best box of Rome Beauty apples, Coy E. Klinger, Grand Junction.

#### DIVISION XXII.

John Deere Plow Company Special—For best box of Grimes Golden, Ellsworth France, Wenatchee, Washington.

#### DIVISION XXIII.

Friend Manufacturing Company Special—Best plate of Newton Pippin, Geo. W. Dyer, Cedar-edge.

#### DIVISION XXIV.

Dempster Mill Manufacturing Company Special—For best plate of Jonathans, Austin E. Miller, Austin.

#### DIVISION XXV.

Fresno Nursery Company Special—For the best five (one plate) of Winesaps, Geo. LaGrange, Grand Junction.

#### DIVISION XXVI.

Davis County Nursery Special—For best box of Ganos, Geo. LaGrange, Grand Junction.

#### DIVISION XXVII.

Meyer Litho & Printing Special—For best five boxes of Gano apples, W. T. Bozman, Cortez.

#### DIVISION XXVIII.

International Harvester Company of America Special—For best five boxes of Arkansas Black, Ellsworth France, Wenatchee, Washington.

#### DIVISION XXIX.

"Better Fruit" Trophy—For best five-box pack of Gano, A. E. Miller, Austin.

#### DIVISION XXX.

Northern Nursery Company Special—For best box of Jonathan, Austin E. Miller, Austin.

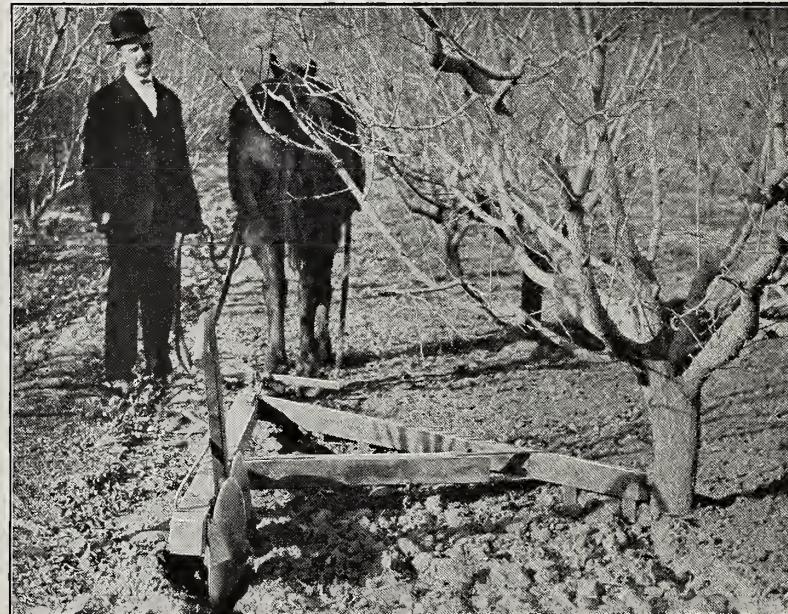
#### DIVISION XXXI.

Oliver Plow Company Special—For best plate of Missouri Pippin, Geo. LaGrange, Grand Junction.

## Apple Land Near Goldendale, Washington

A newly developing fruit district on the Spokane, Portland & Seattle Railroad, adjacent to The Dalles and Hood River, Oregon. It has been demonstrated that there is some of the best apple land in the world to be found in the famous Klickitat pine belt near Goldendale. Two large canals will be built overlying these lands in the near future. Just think! We can sell you No. 1 good apple land for \$12.00 to \$30.00 per acre. Careful selections made for non-residents.

### GOLDDENDALE LAND AND INVESTMENT COMPANY



"Lay  
Down  
de  
Shovel  
and  
de  
Hoe."

No  
more  
"shoveling  
pockets"  
or  
hoeing  
under  
the  
trees.

Will  
extend  
far  
under  
the  
low  
branches,  
stirring  
the  
soil  
and  
placing  
the  
irrigating  
ditches  
where  
other  
cultivators  
cannot  
reach.

"SANBORN'S GOES UNDER THE TREE"

Description and prices on application

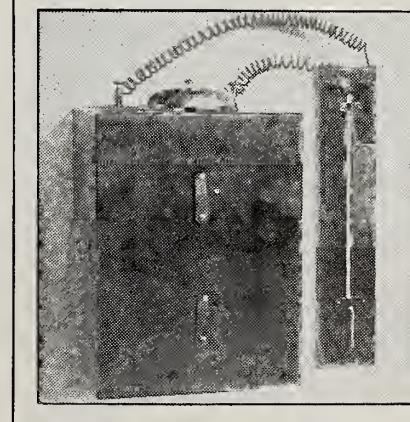
W. J. SANBORN

PALISADE, COLORADO

## PRINTING FOR FRUIT GROWERS

Our facilities for the prompt handling of out-of-town orders, together with the high-class service we render, makes this a good place to buy Printing. Better Fruit is designed and printed in our establishment. Long Distance Telephone Main 165.

**F. W. BALTES & CO.**  
FIRST AND OAK PORTLAND, OREGON



THE  
**Cederborg  
Frost Alarm**

Will wake you up in time. Order through your association or direct from

**G. V. Cederborg**  
Denver, Colorado

THE  
*Greatest Apple Nursery in the West*

Greatest Also in MOST OTHER  
 NORTHWESTERN FRUITS

*Our 1910 Plant*

LET THE FIGURES SPEAK

Apple	5,000,000
Peach, prune, plum and apricot	1,400,000
Pear	270,000
Cherry	150,000
GRAND TOTAL	6,820,000

Above is all grafted and budded stock and does not include seedlings.

HERE'S SOME MORE OF OUR 1910 PLANT

Apple seed	30 bushels
Pear seed	5 bushels
Cherry seed	8 bushels
Peach pits	18 tons

Apple seedlings in nursery row for budding, 200,000  
 Pear seedlings in nursery row for budding, 100,000

*Besides our heavy stock of  
 Ornamental Trees, Shade Trees, Vines,  
 Roses, Etc.*

TOTAL AREA OF OUR 1910 PLANT  
 ABOUT FIVE HUNDRED ACRES

Up to date (February 10, 1910) we have closed contracts for next season's delivery covering 1,736,000 apple grafts.

If you are a large buyer and are ready to consider a proposition to have trees grown for you on contract, drop us a line telling us your wants.

Our earliest patrons today are the ones who've heretofore had disappointing experiences by waiting.

We are organized to plant, grow, dig and deliver to our patrons in the most satisfactory manner, the best nursery stock that money can buy or skill produce. Trees thoroughly matured, healthy, hardy and well rooted.

**WASHINGTON NURSERY COMPANY**

Send for Catalogue. Agents everywhere

TOPPENISH, WASHINGTON



*This photograph is that of some Spitzenberg grafts, taken on October 9, 1909, showing entire root—one year's growth. This is certainly good evidence that we have the soil in which to grow good trees, and that having the soil we know how to cultivate to develop the marvelous root system for which our trees are famous. The above cut appeared in December "Better Fruit" and is reproduced here to indicate what our first-class apple grafts look like. This bunch of trees was exhibited at the 1909 Spokane National Apple Show and attracted a great deal of attention.*

## DIVISION XXXII.

Plattner Implement Company Special—For best box of Winter Banana, E. A. Fleming, Silt.

Shenandoah Nurseries Sweepstakes—To the person winning the most first prizes on plates of fall varieties, J. W. Murphy, Glenwood, Iowa.

German Nurseries and Seed House Sweepstakes—To the person winning the most first prizes on plates of winter varieties, F. S. Carman, Grand Junction.

C. M. Hobbs & Sons Special—For best plate of Winter Banana, Chas. H. Dixon, Cory.

## DIVISION XXXIV.

F. W. Menery Crescent Nurseries Special—For three best boxes of Winter Banana, Gertrude Park, Silt.

## DIVISION XXXV.

Youngers & Company Special—For best box of Northern Spy, Round Crest Fruit Company, Canon City.

## DIVISION XXXVI.

Antler's Orchard Development Company Special: Class A—Best five boxes of Jonathans, Chas. H. Dixon, Cory.

Class B—Best five boxes of Winter Banana, W. S. Park, Silt.

## DIVISION XXXVII.

Gould's Manufacturing Company Special—For best box of Winesap, Ellsworth France, Wenatchee, Washington.

## DIVISION XXXVIII.

The Denning Company Special—For best box of Winter Pearmain, Ellsworth France, Wenatchee, Washington.

Hemingway's "London Purple" Company (Limited) Specials:

Class 1, For best Plate of Jonathans—First, A. E. Miller, Austin; second, A. M. Niles, Olath.

Class 2, For Best Plate of Rome Beauty—First, A. E. Miller, Austin; second, T. J. Harshman, Cory.

Class 3, For Best Plate of Grimes Golden—First, T. J. Harshman, Cory; second, J. P. Caldwell, Cedaridge.

Class 4, For Best Plate of Winesap—First, F. S. Carman, Grand Junction; second, W. S. Chandler, Grand Junction.

Class 5, For Best Plate of Spitzenberg—First, Oliver Rogers, Grand Junction; second, Chas. Lamb, Clifton.

Barteldes Seed Company Special—Best plate of Stayman Winesap, A. B. Stoddart, Jr., Grand Junction.

Best plate of Gano, Austin E. Miller, Austin. Best plate of Thunderbolt, W. T. Bozman.

Brother Jonathan Trophy—For best three boxes of Jonathans, A. A. Ebersol, Paonia.

Gano Trophy—For best single box of Gano, A. E. Miller, Austin.

Latimer Chemical Company Special—For best five plates of Winter Apples, L. A. David, Austin.

Round Crest Orchard Heater Company Special—No award.

Edmund Peake Company Economy Code Specials:

Division 1, Class A—First, Grand Junction Fruit Growers' Association; second, Fruita Fruit & Produce Association; third, Nelson Brothers Fruit Company, Paonia.

Division 1, Class B—First, Round Crest Fruit Company, Canon City.

Division 1, Class BB—First, Ellsworth France, Wenatchee, Washington.

Roderick-Lean Manufacturing Company Special—Best general plate display—J. W. Murphy, Glenwood, Iowa.

International Apple Shippers' Association Sweepstakes—Best individual Display of Commercial Pack, W. T. Bozman, Cortez.

Chas. D. Griffith Shoe Company Special—For best plate of any variety—First, F. S. Carman, Grand Junction; second, Chas. H. Dixon, Cory.

The Maddox Steele Apple Box Press Company Special—Best five boxes of winter apples, Division 1, Class C, L. H. Titchena, Cashmere, Washington.

"Better Fruit" Subscription Special:

Jonathan—Austin E. Miller, Austin.

Rome Beauty—Austin E. Miller, Austin.

Winter Banana—C. H. Dixon, Cory.

Stayman Winesap—A. B. Stoddart, Jr., Grand Junction.

Gano—Austin E. Miller, Austin.

Winesap—F. S. Carman, Grand Junction.

Thunderbolt—W. T. Bozman, Cortez.

York Imperial—Maryland (C. P. Close, College Park, Maryland).

Missouri Pippin—F. S. Carman, Grand Junction.

Grimes Golden—T. J. Harshman, Cory.

R. I. Greening—G. H. Webb, Cedaridge.

Yellow Newton—Western Oregon Orchards Company, Medford, Oregon.

W. W. Pearmain—W. N. Kinnicott, Cory.

Baldwin—M. E. Snow, Canon City.

Arkansas Black—C. E. Klinger, Cory.

Minkler—F. S. Carman, Grand Junction.

Spitzenberg—Oliver Rogers, Grand Junction.

Delicious—J. W. Murphy, Glenwood, Iowa.

Senator—F. S. Carman, Grand Junction.

King David—J. W. Murphy, Glenwood, Iowa.

Wagner—J. K. Johnston, Montrose.

Ralls Genet—F. S. Carman, Grand Junction.

Northern Spy—Mrs. Arthur King, Eckert.

Zaun Ladder Company Special—Best plate of Winesap, Chas. H. Dixon, Cory.

Best plate of Jonathan, Austin E. Miller, Austin.

Denver Lithograph Company Special—Best box Grimes Golden, Ellsworth France, Wenatchee, Washington.

Best box Winesap, Ellsworth France, Wenatchee, Washington.

Hamilton Reservoir Orchard Heater Company Special—Best five plates of winter apples saved by orchard heating, Geo. LaGrange, Grand Junction.

H. M. Simpson & Sons Nursery Special—Best plate Newton, M. E. Snow, Canon City.

E. P. Bernardin Nursery Special—Best plate Northern Spy, Fred Benham, Grand Rapids, Michigan.

J. H. Skinner & Company Nursery Special—Best box Grimes Golden, Ellsworth France, Wenatchee, Washington.

Grand Valley Fruit & Water Company Special—Sweepstakes, general display plates, F. S. Carman, Grand Junction.

Colorado Nursery Company Special—Best ten plates of winter apples by an individual, J. K. Johnston, Montrose.

The Grand River Irrigation & Development Company Special—Largest and best box, as to color, of Jonathans grown in Colorado, Earl Wilson, Hotchkiss.

Lukenbill Tent Company Special—Largest number of prizes on commercial pack, France & Titchenal, Washington.



**T**HE HUMAN SIDE OF TWINE.—When we drive home from the implement dealer with our little load of Sisal twine for the coming harvest, we do not often realize that we are giving that twine its final lift on the journey of many thousand miles which it has taken months to make. Seldom do we appreciate when we give it its final resting place in the binder box that the first hands which touched it were those of a Maya boy or girl in far off tropical Yucatan, whose ancestors were a great civilized people, with temples and literature centuries before Columbus came ashore in his red velvet suit. Or, if it is Manila twine, the first step in its long pilgrimage was under the guidance of a bare-footed, brown-skinned little Filipino savage, who perhaps never heard of a binder, and whose views of agricultural implements are a pointed stone or a crooked stick. Yet, if it were not for the industry of these two widely separated nations, the farmers of this rich state would still be obliged to bind their grain with old-fashioned wire, which never worked, or with untrustworthy cotton strand. In fact, the problem of twine was the problem of successful binding for years after the self-binder was an established fact.

## Colonial Strain Rhode Island Reds

### SINGLE COMB

*The birds that lay all winter  
The birds without superiors, for the table  
The birds that are beautiful to look upon*

My pens are made up of carefully selected pullets that have been laying all winter, of fine color and vigor. They are mated with richly colored, strong cockerels from the State of Rhode Island, the original home of the Reds. These cockerels are from trap-nested heavy-laying stock. My birds are kept under the Philo system. Orders now booked for March, April, May and June eggs. Settings of 15, \$3.00. February eggs all engaged. Young stock for sale in season.

WM. B. DYER, Breeder

"Canyon Crest" Ranch, Hood River, Oregon

## PROGRESSIVE HORTICULTURE

Describing Winfield Nursery trees of quality. With over fifty photographic views. Ready in February. Mailed free

### GREAT REAGAN APPLE

The apples in this picture were taken from a bushel which contained only sixty-three apples, the average weight being about fourteen ounces each. They bear regular, very prolific, fruit blood red; solidity and quality places them at the head for export market. Plant now and you will be ready for the big export market opening to the United States.

### Gold for Commercial Planters

#### COUPON

I am interested in Trees of Quality and will plant about \_\_\_\_\_ trees.

Name \_\_\_\_\_

P. O. \_\_\_\_\_

State \_\_\_\_\_



### "WINFIELD," THE GREAT BLACK-CAP RASPBERRY

Free with orders for The Winfield Nursery Trees of Quality. Originated here. Introduced solely by The Winfield Nursery Company. No plants for sale this year. Given as premium with other stock for testing. Name "Winfield" by Hon. H. P. Gould of United States Pomological Society, who pronounces it most promising blackcap raspberry ever delivered.

## THE WINFIELD NURSERY CO.

(INCORPORATED)

J. Moncrief, President

WINFIELD, KANSAS

It took many years and thousands of dollars to eliminate this primary drawback to the early grain growers of the country. One manufacturer alone spent \$15,000 trying to make a twine out of grass, \$35,000 using paper as a substitute, and \$43,000 on straw—all in the end to be discarded as unsatisfactory. Then, after searching the world with a close tooth rake, as it were, it was found that two fibres could be made to do the work—Manila and Sisal. The Manila—long, soft and even—had generally been used in multiple strands for making cable and cordage; while the Sisal—strong, pliable and smooth—was found to lend itself perfectly for the manufacture of a single-strand cord, such as the self-binder necessitated. Then commenced a merry struggle between the distant races for the honor of supplying the twine which was to make His Majesty, the American farmer, the greatest food producer in the world. At first, owing to the established position of the Manila hemp trade caused by the cordage industry, the little brown brother in the Philippines forged ahead, but he made no progress in his methods of production, using the knife and block and other simple methods followed by his primitive forefathers in extracting the fibre. It was soon seen that Sisal would either be the ultimate material to supply this demand or the demand would not be

filled. At this point of the race a number of clever, aggressive Yucatecans, educated in the sciences in this country and abroad, sprang into the game. They saw the future commercial possibilities of the neglected Sisal plant. At their own expense they built railroads into the arid, dry territories where henequen grew. They invented new machines, capable of cleaning 100,000 leaves a day, and soon began to compete on an equal basis with the Manila fibre. The Spanish-American war temporarily advanced the price of Manila fibre to such an extent that good grades of Manila fibre commanded a price which was practically prohibitive for binder twine. Therefore, manufacturers of binder twine concentrated their energy and genius in the production of a perfect binder twine from Sisal. This required some adjustment of machinery and some change in methods, but manufacturers of twine succeeded so that the twine made from Sisal has for some years been as perfect and satisfactory as any binder twine ever made from any material. This has resulted in the increased use of Sisal, until during the past season not less than 85 per cent, and possibly 90 per cent, of the material which went into the manufacture of binder twine in the United States was Sisal fibre. First-class binder twine can be made from high-grade Manila fibre, but it

is very difficult to make even a reasonably good article of binder twine from low-grade Manila. Before the American occupation of the Philippine Islands, the Spanish officials at times exerted their arbitrary power for the purpose of maintaining the quality of the fibre which was produced by the natives. It was not an uncommon thing for the governor of a district to seize a quantity of inferior fibre and publicly burn it in the middle of the plaza. This was an object lesson to the natives to produce better grades of fibre. However, since the Americans have taken possession of the Philippine Islands, no authority has been exercised and no influence exerted by the officials in connection with the quality of fibre. The result is a very much greater proportion of low-grade fibres than has ever been produced in previous years. Undoubtedly, large quantities of this low-grade fibre will be used in the manufacture of binder twine for the harvest of 1910, and it is unnecessary to state that those who attempt to use twine made from this low-grade Manila fibre will have troubles of their own. There may never be a famine in twine, but it is rather to the farmer's interest always to keep a weather eye on the future, and in this particular instance to secure his twine supply, whether it be Sisal or Manila, as early a date as possible.

CAPITAL STOCK \$100,000 SURPLUS \$20,000

## FIRST NATIONAL BANK

HOOD RIVER, OREGON

F. S. STANLEY, President  
J. W. HINRICKS, Vice President  
E. O. BLANCHAR, Cashier  
V. C. BROCK, Assistant Cashier

ESPECIAL ATTENTION AND CARE  
GIVEN TO BUSINESS DEALS  
FOR NON-RESIDENT CUSTOMERS

Assets over \$500,000

Savings Bank in connection

Send us your  
White Salmon Valley Business

## White Salmon Valley Bank

Under state examination

White Salmon, Washington

## LADD & TILTON BANK

Established 1859 Oldest bank on the Pacific Coast

PORLAND, OREGON

Capital fully paid	\$1,000,000
Surplus and undivided profits	\$600,000

Officers:  
W. M. Ladd, President R. S. Howard, Jr., Assistant Cashier  
Edward Cunningham, Vice President J. W. Ladd, Assistant Cashier  
W. H. Dunckley, Cashier Walter M. Cook, Assistant Cashier

INTEREST PAID ON TIME DEPOSITS AND SAVINGS ACCOUNTS

Accounts of banks, firms, corporations and individuals solicited. Travelers' checks for sale, and drafts issued available in all countries of Europe.

LESLIE BUTLER, President  
F. MCKERCHER, Vice President  
TRUMAN BUTLER, Cashier

Established 1900  
Incorporated 1905

## Butler Banking Company

HOOD RIVER, OREGON

Capital Fully Paid, \$50,000 Surplus and Profits are \$30,000

INTEREST PAID ON TIME DEPOSITS

### We Give Special Attention to Good Farm Loans

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

## NEW RESIDENTS

We are always pleased to extend courteous assistance to new residents of Hood River and the Hood River Valley by advising them regarding any local conditions within our knowledge, and we afford every convenience for the transaction of their financial matters. New accounts are respectfully and cordially invited, and we guarantee satisfaction. Savings department in connection.

HOOD RIVER BANKING AND TRUST COMPANY

HOOD RIVER, OREGON

J. M. Schmeltzer, Secretary  
Hood River Abstract Company  
Hood River, Oregon  
ABSTRACTS INSURANCE  
CONVEYANCING

ABSTRACTS, LOANS,  
INSURANCE, CONVEYANCING  
WAUCOMA ABSTRACT AND  
INVESTMENT COMPANY  
(Incorporated) Hood River, Oregon



## FRUIT GROWERS' ASSOCIATIONS AND UNIONS

WE PUBLISH free in this column the name of any fruit growers' organization. Secretaries are requested to furnish particulars for publication.

## Oregon

Medford Fruit Growers' Union, Medford; Lane County Fruit and Vegetable Growers' Association, Eugene; Ashland Fruit and Produce Association, Ashland; Rogue River Fruit Exchange, Grants Pass; Hood River Fruit Growers' Union, Hood River; Hood River Apple Growers' Union, Hood River; Grand Ronde Valley Fruit Growers' Union, La Grande; Milton Fruit Growers' Union, Milton; Douglas County Fruit Growers' Association, Roseburg; Willamette Valley Prune Association, Salem; Mosier Fruit Growers' Association, Mosier; The Dalles Fruit Growers' Union, The Dalles; Salem Fruit Union, Salem; Albany Fruit Growers' Union, Albany; Coos Bay Fruit Growers' Association, Marshfield; Mount Hood Fruit Growers' Union, Mount Hood; Estacada Fruit Growers' Association, Estacada; Umpqua Valley Fruit Growers' Association, Myrtle Creek; Yamhill Fruit and Nut Growers' Association, McMinnville.

## Washington

Kennewick Fruit Growers' Association, Kennewick; Wenatchee Fruit Growers' Union, Wenatchee; Puyallup and Sumner Fruit Growers' Association, Puyallup; Vashon Island Fruit Growers' Association, Vashon; Mt. Vernon Fruit Growers' Association, Mt. Vernon; Spokane Fruit

and Vegetable Growers' Association, Spokane; White Salmon Fruit Growers' Union, White Salmon; Thurston County Fruit Growers' Union, Tumwater; Bay Island Fruit Growers' Association, Tacoma; Whatcom County Fruit Growers' Association, Curtis; Yakima Valley Fruit and Produce Growers' Association, Granger; Buckley Fruit Growers' Association, Buckley; Lewis River Fruit Growers' Union, Woodland; Yakima County Horticultural Union, North Yakima; Evergreen Fruit Growers' Association, R.R., Spokane; Lake Chelan Fruit Growers' Association, Chelan; Zillah Fruit Growers' Association, Toppenish; Kiona Fruit Growers' Union, Kiona; Mason County Fruit Growers' Association, Shelton; Clarkston Fruit Growers' Association, Clarkston; Prosser Fruit Growers' Association, Prosser; Walla Walla Fruit and Vegetable Union, Walla Walla.

## Idaho

Southern Idaho Fruit Shippers' Association, Boise; New Plymouth Fruit Growers' Association, New Plymouth; Payette Valley Apple Growers' Union, Payette; Parma Roswell Fruit Growers' Association, Parma; Weiser Fruit and Produce Growers' Association, Weiser; Council Valley Fruit Growers' Association, Council; Nampa Fruit Growers' Association, Nampa.

## Colorado

San Juan Fruit and Produce Growers' Association, Durango; Fremont County Fruit Growers' Association, Canon City; Rocky Ford Melon

Growers' Association, Rocky Ford; Plateau and Debeque Fruit, Honey and Produce Association, Debeque; The Producers' Association, Debeque; Surface Creek Fruit Growers' Association, Austin; Longmont Produce Exchange, Longmont; Manzanola Fruit Association, Manzanola; Delta County Fruit Growers' Association, Delta; Boulder County Fruit Growers' Association, Boulder; Fort Collins Beet Growers' Association, Fort Collins; La Junta Melon and Produce Company, La Junta; Rifle Fruit and Produce Association, Rifle; North Fork Fruit Growers' Association, Paonia; Fruita Fruit and Produce Association, Fruita; Grand Junction Fruit Growers' Association, Clifton, Palisade, Grand Junction; Palisade Fruit Growers' Association, Palisade; Peach Growers' Association, Palisade; Colorado Fruit and Commercial Company, Grand Junction; Montrose Fruit and Produce Association, Montrose; Hotchkiss Fruit Growers' Association, Hotchkiss; Paonia Fruit Exchange, Paonia; Colorado Fruit Growers' Association, Delta.

## Montana

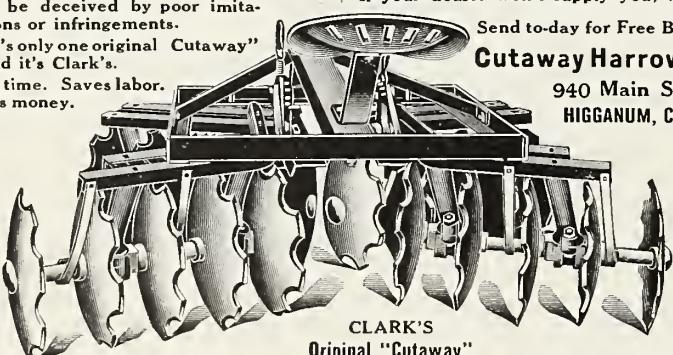
Bitter Root Fruit Growers' Association, Hamilton.

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Peachland Fruit Growers' Association, Limited, Peachland, British Columbia; British Columbia Fruit Growers' Association, Ladner, British Columbia.

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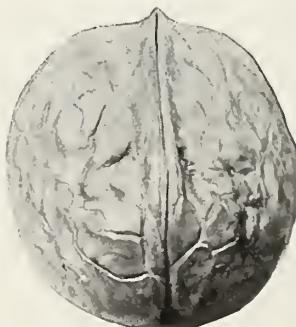
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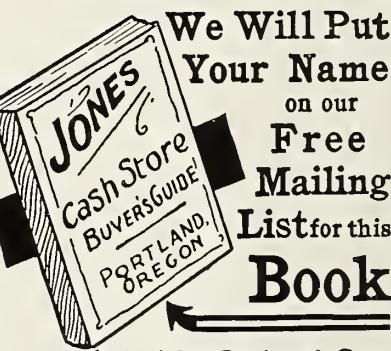


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◆ ◆ ◆

**C**OLORADO APPLE GRADING RULES.—To grade fancy Mammoth Black Twigs, Rome Beauty, Bellflower, Paragons, Willow Twigs, Shackleford, Northern Spy, York Imperial, Northwestern Greenings and Pewaukees, must measure  $2\frac{3}{4}$  inches and up in diameter, free from worm

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holes, sunburn, blemishes, and of good color. Fancy Ben Davis, Mann, Gano, Baldwin, Pearmain, Arkansas Black, Huntsman, Walbridge, Wagener and Colorado Orange must grade  $2\frac{1}{2}$  inches and up in diameter, free from worms and other blemishes, good color. Fancy Jonathan, Winesap, Grimes Golden, North Missouri Pippin, Geneton, Romanite, Jeanette and all other small varieties must measure at least  $2\frac{3}{8}$  inches and up in diameter, free from worms and blemishes, good color. To grade choice, all varieties must be  $2\frac{1}{4}$  inches in diameter and free from rot, bruises and

sunburn, and not more than one small worm hole in an apple, packed in paper-lined boxes. All boxes should be new. Fruit in the fancy and choice grades must be hand picked and free from the effects of frost. Gauge apples that will just go through the gauge are too small and must go in the grade lower. Care should be taken to see that the apples are closely placed throughout the box when finished; box should show good bulge on top and bottom. All boxes should be heavy pack. Varieties and grades should be plainly stamped on the boxes at the time of packing.

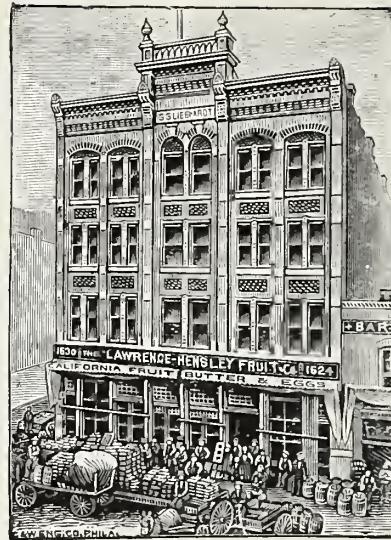
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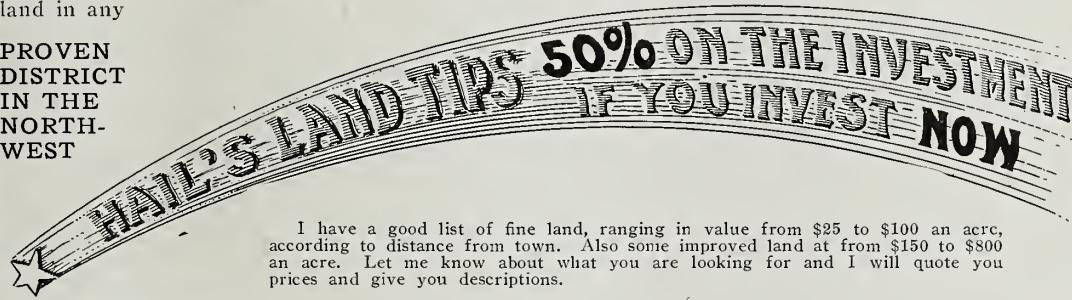
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NATIONAL IRRIGATION JOURNAL

120 Sherman Street, Chicago

THE WASHTUCNA VALLEY.—Situated just eighty miles southwest of Spokane is the Wash-tucna Valley, a very fertile valley comprising only 4,000 acres of land that can be watered by the irrigation project carried out by The Palouse Irrigation & Power Company. The soil that will be watered by this project is composed of a fine volcanic ash, noted throughout the country for its wonderful powers for holding moisture and its productiveness after obtaining that moisture. The difficulties which have been experienced in many other irrigation systems in regard to drainage, will be no factor there, as the land throughout the entire valley has a perfect, natural drainage system. Under a layer of from five to twenty-five feet of this volcanic ash is a bed of gravel, which is stated by all those having a thorough knowledge of irrigation to be a great benefit to any irrigated district. This bed of gravel insures a perfect drainage. Water will not stand upon the surface of the ground but will gradually seep down through the soil into this gravel bed, leaving the surface moist and drained. This condition also insures pure drinking water, one very important factor that must always be considered by those looking for a home. The water for this project is taken from the Palouse River, but the company has guarded against a shortage of water from that source and have Rock Lake for a storage. Rock Lake is ten miles long and a mile wide, and the company has built a dam at the outlet raising the lake three feet, which insures ample water to irrigate double the amount of land now being sold. If necessary, the lake can be raised twenty feet. Without a doubt the water rights owned by the company are the best of any project in the Northwest. The company plans on making this valley a strictly high-class winter apple district, and to simplify matters have a nursery of the very best variety of the winter apple trees, which are sold to the residents of the valley for fifteen cents each. These yearling trees are as fine as any grown, and the company has had some very flattering offers for the entire lot from various nurserymen. The valley has an altitude of 850 to

1,100 feet, and with the richest of fruit soil and plenty of water the valley is ideally located for the growing of high-grade winter apples; the old orchards in the valley are positive proof of this.

The recent completion of the Spokane, Portland & Seattle Railway gives the Washtucna Valley a direct route to Spokane, the metropolis of the Inland Empire, and to Portland and Seattle, the

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The Colorado Fruit Grower aims to cover that section of arid land lying between the Missouri River on the east and the Sierra Nevada and Cascade Ranges on the west, commonly known as the Great Salt Basin.

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CHERRY, Etc.**

Remember, the Root System  
is one of the most important factors.  
Ours are unsurpassed.

Regardless of your wants, you cannot afford to place your order until you hear from us. Write today.

Address: LAFAYETTE, OREGON  
Mention "Better Fruit"



**Guaranteed Cultivators**

Orchardists in California and other fruit-growing sections know that the Planet Jr Orchard and Universal Cultivator does more and better work than any other implement in orchard, vineyard, and hop-yard. Thousands are in actual use today giving bountiful results.

**Planet Jr. No. 41**

is strong, substantial, and lasting, and fully guaranteed. It has low wheels enclosed by a steel frame, with steel tongue. Carries cultivator teeth sweeps, hoes, and furrowers, and is equipped with side-hitch and fruit and tree shield. Adjustable for depth and width of cut. Easily handled.

We carry stock in San Francisco. Agencies in all principal Pacific Coast cities. Write for name of nearest agent, also new 56-page catalogue of all 1910 Planet Jr implements, including Orchard Cultivators, Beet Cultivators, Horse Hoes, Seeders, and Wheel Hoes. Free on request. Write today.

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**G. Y. EDWARDS & CO.**

HOOD RIVER, OREGON

*Our Specialties:*

Fruit Lands, Orchards and Raw Lands

Get our literature and list of orchards

WRITE US FOR PARTICULARS

**THE BEST IRRIGATED  
FRUIT AND ALFALFA LANDS  
OF THE PACIFIC NORTHWEST**

Are those of the Western Land and Irrigation Company at Echo, Oregon. The lands of the Western Land and Irrigation Company are the best irrigated lands of Umatilla County. Butter Creek lands of this project are the richest in the world.

These lands are noted by those familiar with them for the fine quality of its soil, having the necessary elements to grow all kinds of fruits and alfalfa after applying water. These lands have a deep soil, easy sloping surface, most all being very level, all having fine natural drainage; there are no pot holes. Here you have the easiest lands to irrigate and work. Here it is a pleasure to grow crops. You should examine these lands carefully before you make a selection for a piece of irrigated land.

Here you will find many reasons why you should select your future home. Here you will find many advantages for a home, if you will take the time and pains to examine into this project. Our lands are being sold on exceedingly easy terms and the prices are low for the quality of the land. We have an abundance of water. The climate is the most healthy.

We are selling tracts from five and ten acres up.

Our terms are within reach of most everybody. Special terms for the next thirty days. Remember the place, Echo, Oregon.

For all particulars address

**W. J. STAPISH**

516 East Main Street

WALLA WALLA, WASHINGTON

"THE OLD RELIABLE"

**Albany Nurseries**

INCORPORATED

ALBANY, OREGON

LARGE STOCK, FIRST-CLASS TREES

Place Your Orders Now  
CATALOGUE FREE

MORE SALESMEN WANTED

**Mr. Orchard Planter**

Can you afford to plant trees without investigating conditions surrounding their growth? Ascertain for yourself as to whether or not they are grown by men who thoroughly understand their business. Our trees are

**GROWN BY IRRIGATION**

In the famous Yakima Valley, by competent men, long experienced in the business.

Write for catalogue.

**Yakima Valley Nursery Co.**  
North Yakima, Washington

# SEEDS

FIELD — GARDEN — FLOWER

Experience and a thorough knowledge of our business and the markets of the world, enable us to furnish the very best seeds, plants and supplies obtainable. It has taken many years to establish this relation with the producers and best growers, but only in this way is it possible to obtain the finest, true stocks at no greater cost to our customers than the ordinary kinds.

**FREE: OUR BEAUTIFUL NEW CATALOG**  
No. 200

Write today. We send postpaid.  
Look for our Diamond trade-mark. It means  
*Real Quality*—the best obtainable

**DIAMOND PORTLAND SEED CO. QUALITY**  
Portland, Oregon 25  
"Diamond Quality" House

**Seeds**

THE KIND YOU CAN'T KEEP IN THE GROUND

They grow, and are true to name.  
Write for prices on your wants.

188 Front Street J. J. BUTZER Portland, Oregon  
Poultry Supplies, Spray, Spray Materials, Fruit Trees, Etc.

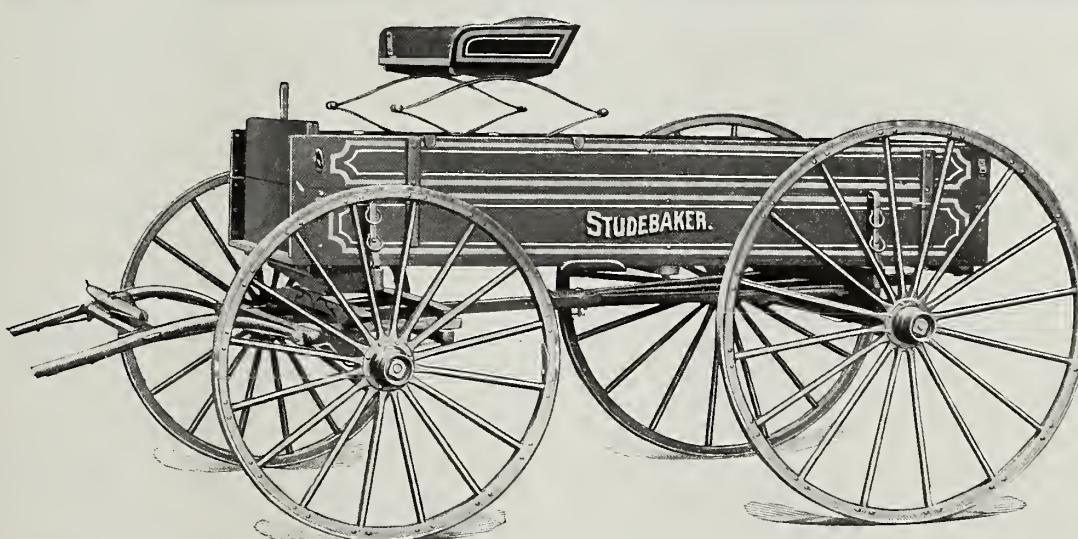
**Surplus Seedlings in Cold Storage at Portland, Oregon**

Apple Seedlings in the following grades, No. 1, 2, and 3  
Japan Pear Seedlings, No. 1  
Wire or write for prices, giving amounts wanted

**SHENANDOAH NURSERIES**

D. S. LAKE, Proprietor

Shenandoah, Iowa



Studebaker  
one-horse  
wagons—the  
best wagon on  
earth. Prices on  
these wagons  
reduced January  
1, 1910. Don't  
buy until you  
get the NEW  
PRICE on a  
Studebaker.

**Studebaker** vehicles cost no more than others. We want you to have our catalogue---a postal card will bring it to you, together with the name of the nearest agent.

Agencies at Hood River, The Dalles, Medford, Ashland, Grants Pass, Wenatchee,  
North Yakima, and two hundred other points in Oregon and Washington.

**STUDEBAKER BROS. CO.** 330-336 E. Morrison Street, PORTLAND, OREGON  
Wagons, Buggies, Harness, Automobiles

**P**EACH-GROWING.—During the past twelve or fourteen years the peach industry has grown to such proportions in Palisade, writes John J. Bridges, of Palisade, Colorado, that it has not only been a revelation to the world in general but in many ways has been a surprise to ourselves. Many people with scant means, who started the growing of peaches in this section a few years ago have built up independent fortunes and are today living and enjoying the fruition of their desires, as only people who earn competency can enjoy it, and our lands have grown in value—and justly so—until today we bear the proud distinction of occupying some of the highest-priced horticultural land in the world. By our untiring efforts in building up this great industry, we have caused the thinking public to abandon the old idea of "the farmer," until now the farmer is looked upon as occupying one of the most noble callings, and the occupation is being sought by people in all walks of life. We have not been stingy with what we have learned nor the money we have made, and, at the present time, there are a great many districts being developed in Utah, Idaho, Oregon and Washington by people who learned the business and made their money at Palisade. Before planting an orchard, great care should be taken in preparing the ground. It should be well plowed, leveled and thoroughly irrigated. The most important of all things in starting an orchard is the selection of varieties; not only in the selection, but the purchasing of trees of the kind represented, a place where you may depend on the variety as they represent. Thousands of dollars are being lost every year by trees coming into bearing which are not true to label. Nurseries always insert a clause in their contracts which relieves them of any liability from damage resulting from this source, and I believe there is need of legislation along these lines. I would not sug-

gest more than three varieties of peaches for a common-sized orchard, these kinds depending largely on the location and time of ripening in various sections of the country. What would be best in one place might not be in another. It is safe to suggest Champions and Elbertas for any locality. Cultivation and irrigation is the keynote to success in growing an orchard. I do not go much on the pruning of a young peach tree. Keeping off the sprouts from around the bottom and possibly thinning out some from the center is about all that is necessary to do to a peach tree until it is three years old. The twig bores are about the only source of annoyance in the pest line, up to this time, and by spraying thoroughly with arsenate of lead at times when these show signs of working, they are easily eliminated. Commencing with the third or fourth year, or, say when a tree comes into bearing, too much care cannot be exercised with the orchard. No person can explain the many details of caring for a peach orchard, and especially is this true of pruning. I am sorry to say that this one important feature is, in many cases, the most carelessly done. I would advise careful thinning out and cutting back of all parts of the tree, thus keeping

the tree in a healthy, growing condition, and cutting back or heading in the top branches will cause the tree to put out new shoots all over, providing new wood for the following crop and keeping the limbs from bending from their present load. A peach tree properly pruned and thinned will not bend. About the time a peach tree comes into bearing, we find a number of pests also coming into bearing, carrying out the old adage, "It isn't all sunshine in any business." There are the twig bores, green aphids, peach louse, etc., to contend with. So far, we in this locality have been very fortunate in not being troubled to any large extent by these pests. The time is here, however, when we must, in all sections of Western Colorado, go into the spraying business much

WE WERE AWARDED

## Gold Medal

AT THE

Alaska-Yukon-Pacific Exposition

In Seattle, 1909

FOR DISPLAY OF  
NURSERY STOCK

The Sunnyside Nursery  
Company

Incorporated \$100,000

Main Office and Nurseries at Sunnyside, Wash.

To large planters and dealers:

## Contract

YOUR

## Fruit Trees

NOW FOR NEXT YEAR

We will deliver according to specifications. Let us prove to you that we can.

## Northwest Nursery Company

P. O. Box QQ  
North Yakima, Washington  
  
Nurseries:  
Mabton and North Yakima

## SEED Catalog NOW READY

We want every Farmer, Gardener, Poultryman and Stockman to have a copy of our new Seed Book. It contains 120 pages of everything needed to make a success of farming in the West. In this respect Lilly's Seed Book is better and more authentic than other publications of this nature. It is the experience of over twenty-five years of honest seed selling in the West.

Lilly's Seeds are Best for the West and are sold by your dealer. Send today for new catalog.

THE CHAS. H. LILLY CO.  
SEATTLE PORTLAND

## LAYRITZ NURSERY

Victoria, British Columbia

Headquarters for  
CHOICE NURSERY STOCK  
in British Columbia

Cox Orange Pippin

The fancy dessert apple of the very highest quality  
our specialty

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*Grower and Importer of*

FINE NURSERY STOCK, FRUIT, NUT AND ORNAMENTAL  
TREES, SHRUBS AND ROSES

Have No Agents

Direct to Planter

Send for Catalogue

## Russellville Nursery Grows Trees of Quality

ACKNOWLEDGED BY MANY LEADING NURSERYMEN AND  
FRUIT GROWERS TO BE THE BEST GROWN ON THE COAST

For commercial orchards we quote the following: 100,000 apple, 50,000 cherry, 50,000 pear and other stock in proportion. Thirty acres of ornamental trees. See our stock and get prices before buying elsewhere. No agents.

Mention "Better Fruit"

H. A. LEWIS, Proprietor, Montavilla, Oregon

## FRUIT GROWERS, YOUR ATTENTION!

Royal Ann, Bing and Lambert cherry trees; Spitzenberg and Newtown apple trees; Bartlett, Anjou and Ccnice pears, and other varieties of fruit trees

MONTE VISTA NURSERY  
SCAPPOOSE, OREGON

A. HOLADAY

more strongly than we have done in the past. Rex lime and sulphur solution—four or five gallons to fifty—has proved to be the best caustic spray in use. I should advise spraying all peach orchards with this solution, not once in two or three years, but every year. The time to apply this spray is just as late as possible before the bloom opens. I have finished up spraying even after a number of blooms were open, with no ill results. The amount of cultivation and irrigation depends largely on the nature of the soil, some soils requiring much more of both than others. There should be enough cultivation to keep the ground loose, and enough irrigation to keep it moist at all times during the growing season. Where the ground lays in such a way to make it possible, I would

strongly advise irrigation "both ways," running the water say north and south first, then east and west. This reaches all parts of the ground quickly. I used this method last year with very good results. I would advise deep plowing both ways every fall, after the foliage is all off. An important problem in the peach industry has been solved in the last couple of years in the way of orchard heating. I do not mean to go into the heating problem here, nor do I wish to recommend any particular device, but would advise any one in the fruit business, no matter where located, to equip himself with some kind of orchard heaters, and I do not hesitate to say that many localities which had bad failures in the past may, by this means, save their crops in the future.

## PORTLAND WHOLESALE NURSERY COMPANY

Rooms 1 and 2 Lambert-Sargeant Building  
Corner East Alder Street and Grand Avenue  
PORTLAND, OREGON

## ORCHARDISTS' SUPPLY CO.

W. M. Grisinger, Manager

Box 543, Salt Lake, Utah

Offers at wholesale and retail for spring delivery:

200,000 Peach, complete assortment.

25,000 Apple, mostly Jonathan

20,000 Pear, Bartlett & Anjou

10,000 Cherry, sweet sorts

## A Mighty Busy Place

In many nurseries the winter season is a mighty quiet time.

Not so with us.

A casual visitor passing our plant during December, January or February might see few signs of life outside, but inside the office he would find eleven pretty busy people carefully attending to the detail connected with properly receiving, checking, entering and otherwise attending to our orders, while out in the grafting department he would find over sixty men at work on our new plant of grafts.

We have set our mark at five million apple grafts, and if our seedlings hold out will make that total. We have secured from bearing orchards nearly two million scions. We prepare each day from seventy-five to ninety thousand grafts. It's a highly interesting sight. If you're in Toppenish any time we'll be glad to show you through our grafting room.

It will require 250 acres for our apple plant alone this spring, besides the big acreage on stands we have of peach, cherry, pear and apple buds and other stocks prepared last year to mature this fall, which with ornamental stocks and peach, apple, cherry and pear seed will make a total of about 500 acres. This will all be planted within a mile of Toppenish and will as usual be under our own personal supervision.

## Washington Nursery Company

TOPPENISH, WASHINGTON

Agents Everywhere

More Wanted

## RICHLAND NURSERY

Richland, Washington  
FRUIT TREES

Complete stock of leading varieties of Apples, Pears, etc.

WRITE US FOR PRICE LIST

For Northwest Fruit Growers in General

A FULL STOCK OF

Spitzenberg  
Jonathan, Winesaps  
Rome Beauties  
Etc.

31 YEARS IN BUSINESS

Milton Nursery Company

A. MILLER & SONS, Incorporators  
MILTON, OREGON

## WHAT ARE YOU GOING TO PLANT? Tokays, Cornichon, Muscat or Malagas

We have them, strong, well-grown one-year vines, finest in the land

How do BARTLETT'S strike you this season? Plenty of them, stock cannot be beaten, and prices right. Then how's SPITZENBERG, YELLOW NEWTOWN PIPPIN and YELLOW BELLEFLEUR?

One nurseryman visiting our Nursery said, "Gentlemen, you should be proud of this stock." And we are. So will you be when you plant it.

What about CHERRIES? BING, LAMBERT, BLACK TARTARIAN, ROYAL ANNE and CHAPMAN. It would not be hard to sell you these, could you see them.

PEACHES, stocky, well grown, and, say, they have the roots, plenty of them, and not cut off at top of ground.

Another thing: Our prices are RIGHT, we dig our stock RIGHT, handle it RIGHT, treat you RIGHT, and it is sure RIGHT in every way. Write us and we will tell you all about it. Better still, come and see us and we will show you.

CHICO NURSERY CO.

Chico, California

## SURPLUS TREES

50,000 Peach

4,000 Comice Pear

10,000 Winter Nellis Pear

## WAPATO NURSERY

TIM KELLY, Proprietor

WAPATO, WASHINGTON



# YOU'LL HAVE TO HURRY OR GO WITHOUT

Your trees for this spring's planting, as our supply is dwindling. At this writing we have a limited supply of **General Assortment Varieties** suitable for home use, but can still supply **Commercial Plantings** in

NEWTOWN PIPPIN  
WINTER BANANA  
COMICE

SPITZENBERG  
BARTLETT  
ROYAL ANNE

WINESAP  
WINTER NELLIS  
BING

Oregon Nursery Company's trees are famous for their vigor of constitution—plant them right and they'll grow, because they have a better root system than any tree they compete with. They have a three-year-old root nourishing a one-year-old top. That's the reason—is it not reasonable?

Just forward your list of wants—if we're sold out, we'll tell you. Hundreds can verify this statement.

(If you can sell trees, we've a place for you)

## OREGON NURSERY CO. ORENCO, OREGON

# TREES

Pears  
Apples  
Grape Vines  
Roses

### WALNUTS

Franquette, Mayette and all leading French types in grafted trees. Also best English sorts, either seedlings or grafted trees. We solicit your orders, for our stock and prices are right.

### CALIFORNIA HORTICULTURE

By George C. Roeding. Profusely illustrated, describing 2,000 different varieties of trees and plants. Valuable suggestions on planting, pruning and care of orchards. Mailed for twenty-five cents.

1910 Price Catalogue mailed free

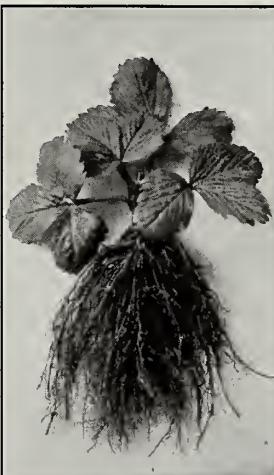
Established 1884

Paid-up capital \$200,000

### Fancher Creek Nurseries

Incorporated

Geo. C. Roeding, President and Manager  
Postoffice Box 89 FRESNO, CALIFORNIA



### CLARK'S SEEDLING

*The Berry that made  
Hood River famous*

The stock for spring planting is the largest and I believe the best that I have ever grown. Prices and further information furnished on application.

A. WHITEHEAD  
HOOD RIVER, OREGON

### Hood River Nurseries

Have for the coming season a very complete line of

### NURSERY STOCK

Newtown and Spitzenberg propagated from selected bearing trees. Make no mistake, but start your orchard right. Plant generation trees. Hood River (Clark Seedling) strawberry plants in quantities to suit. Send for prices

RAWSON & STANTON, Hood River, Oregon

## SAVE YOUR FRUIT AND VEGETABLES

Full crops worth millions of dollars are saved by raising the temperature a few degrees in blooming time. The IDEAL HEATER will do this at a small cost for fuel and labor. This heater gives the strongest downward and outward radiation of heat, which is very essential in saving vegetables and small fruits.

Grand Junction, Colorado.

Dear Sirs: During the frost period of last spring I made a thorough test of the best heaters on the market by putting several makes into actual service, and as a result am convinced that your heater is superior to all other coal or oil burning heaters. I will be in the market for an additional supply of Ideal Orchard Heaters for next season's campaign.

Very truly yours,

C. S. HORAHAN.



Palisade, Colorado.

Dear Sirs: As I am so well pleased with the "IDEAL" smudge pot for saving my fruit crop, thought I would let you know that the pot is a great success in this part of the valley. They far surpass all others that are in the country near by.

Yours truly,

O. C. COOK.

Burns evenly without attention

SENSIBLE, SCIENTIFIC, SATISFACTORY. 56,000 USED IN 1909

SEND FOR OUR BOOKLET, "HOW FRUIT CROPS ARE SAVED FROM FROST IN BLOOMING TIME"  
Send for big list of coal users who endorse it in preference to oil. One can handle Ideal Coal Heaters for five acres

THE IDEAL ORCHARD HEATER CO.

Grand Junction, Colorado

## Freeze! Crops Lost!

WILL YOU BE IN THE ABOVE FIX, OR ARE YOU EQUIPPED WITH THE TROUTMAN ORCHARD HEATERS?

"Efficiency and economy"—these two are combined in the Troutman Heaters. Once you have used them, you will never be without them.

If you have not already placed your order with us, send it in by wire to 703 Symes Building, Denver, Colorado.

OUR LAST WORD: Orchard heating pays; the Troutman Heaters are the "world's standard"; they have no equal. The better combustion means less fuel required to raise the temperature.

Hesitate and your crop is lost; ORDER TODAY.

**The Round Crest Orchard Heater Co.**

CANON CITY, COLORADO

## ELLWOOD FENCE

MADE OF TOUGH SPRINGY STEEL

**Guard Your Orchard With Rabbit-Tight Fence**

A fence that is *really protecting*, from the standpoint of strength, closeness of mesh and barbed strand at bottom, is an orchard necessity.

The wise fruit grower makes *this* investment at the start. It means no nibbling of young trees by rabbits. No chance of damage from live stock.

Ellwood Fences combine great strength with closeness of mesh. They hold out the grown hog and all small animals as well. All styles furnished with barbed wire woven at bottom if desired. With barbed-bottom Ellwood Fence you save the cost of an extra strand of barbed wire stretched under the fence, as is required with plain bottom.

Ellwood Fence is built on simple, correct principles. The

cross (or mesh) wires are firmly wound around heavy cable horizontal or line wires, forming a truss brace that effectually prevents side-slipping.

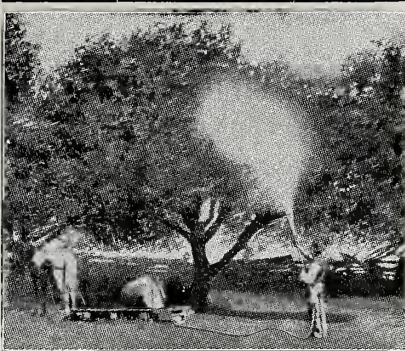
Look into this fence question now. Not only for the sake of your orchards, but to get the most returns from every acre.

**F. BAACKES, Vice-President and General Sales Agent.**

**AMERICAN STEEL & WIRE CO.,**

**Chicago New York Denver San Francisco**

NOTE.—Dealers everywhere. See the one in your town and have him show you the different designs and give prices. Also get from him booklet entitled "How to Build a Cheap Concrete Fence Post," furnished free for the asking.



### The Best Spray Pump

Sprays the tallest fruit trees from the ground. Not too heavy for low bushes. Sprays quickest and best. Does the work in half the time and does it thoroughly. Always ready. Used with bucket, barrel or tank. Lasts a lifetime. No leathers to dry up, wear out, or make trouble.

### Standard Spray Pump

Warranted for 5 Years. Price \$4.00.

It will not cost you a cent to try it. Our special offer gives complete details. Write for it today and we will also send our illustrated circular showing how this pump pays for itself many times over the first season.

The Standard Stamping Co.  
204 Main Street Marysville, O.

C. M. SHAW

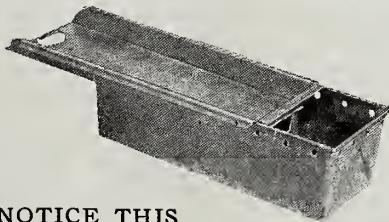
ROY F. DEAN

*Dean & Shaw*

Electrical Supplies and Fixtures  
Scientific Electrical Construction  
Home Phone 3 Hood River, Oregon

### Hamilton Reservoir Orchard Heater

The only heater known that combines simply and perfectly the THREE VITAL FEATURES that make for the most successful and economical outdoor heating.



#### NOTICE THIS

A simple and positive regulation of the fire by simply drawing the cover. This gives a flow of heat just according to the temperature requirements of the night, and the consumption of oil just in proportion to the amount of fire used. This is the only sensible and economical principle and makes it a small consumer of oil. It couldn't be otherwise. Secondly, a reservoir of oil not under fire, which admits of an all-night burn with positively no attention required after lighting. This feature makes a uniform fire throughout the period of burning and saves labor as none others can. Thirdly, it gives just the proper combustion for most successful outdoor heating. Rochester lamps and oil stoves are intended for indoor heating, and orchard heaters have to work under very different conditions. Look into this thoroughly and don't be deceived. It is the simplest in construction, the easiest to operate, and positively the most effective heater known, and these features have all been proven and tried thoroughly in this valley last spring, when more fruit was saved from the frost per heater than any other devices used. We can show you. Draw the cover and the fire does the rest.

Write us for information

**HAMILTON RESERVOIR  
ORCHARD HEATER CO.**  
Grand Junction, Colorado

## Hitch Up to a New Deere Model "B" Disc Harrow

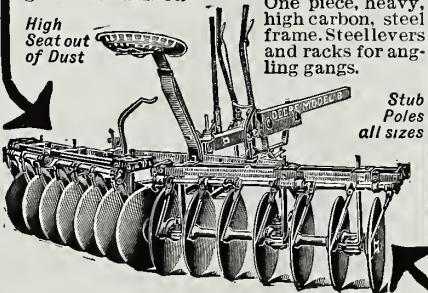


DRIVE out to your field with this harrow and show your neighbors the best job of discing they ever saw—unless they know the **Model "B"**.

Our spring pressure increases flexibility wonderfully, and flexibility means more thorough cultivation. Penetrates deep and pulverizes thoroughly, cutting out dead furrows and uneven places.

This excellent harrow meets all demands. Built in all sizes, from four to nine feet width, with 16", 18" or 20" discs.

Our famous hardwood bearings, oil-soaked. Straight oil tubes, with spring plugs to exclude dirt. Steel shanks set edgewise for greater clearance.



Double leaf, oil-tempered seat spring. Scrapers of swinging type, greatly improved over all others. Stub poles for set-over hitch and convenience in storing. Nothing slighted, but all details fully and practically worked out.

#### "Write a Postal to Deere"

and keep posted. We have but briefly mentioned some of the strong features above. Just drop us a post card and we will promptly send detailed proofs free. Deere goods are of the highest standard, and satisfy the most exacting.

Tongue trucks or fore carriages furnished extra.

We make six other styles of disc harrows for all requirements. Tell us size you need.

Ask for our latest **corn book**. The whole subject of gathering, selecting, curing and testing the seed, as well as planting, treated in a small space, **fully illustrated**. The book for the man who wants better corn.

Useful and handsome pocket ledger free, if you will do us the favor of mentioning this paper.

Address Dept. 46

**DEERE & MANSUR CO.**  
MOLINE, ILLINOIS



TO DESTROY APHIS AND THIRIPS WITHOUT INJURY TO FOLIAGE

SPRAY WITH

## "BLACK LEAF" TOBACCO EXTRACT

#### LISTEN TO THESE:

ROGUE RIVER (OREGON) FRUIT GROWERS' UNION: "Black Leaf" does not burn nor injure the foliage or the fruit and will eradicate the aphis immediately.

DELTA COUNTY (COLORADO) FRUIT GROWERS' ASSOCIATION: "Black Leaf" is the best remedy we have ever found for plant lice on fruit trees.

PROFESSOR GILLETTE, of the Colorado Experiment Station: We have found "Black Leaf" very satisfactory indeed.

HOOD RIVER (OREGON) APPLE GROWERS' UNION: We are satisfied "Black Leaf" is going to take the place of all other aphis sprays in this section.

MR. A. N. JUDD, Watsonville, California: For all plant lice, and green or black aphis, "Black Leaf" Tobacco Extract is the most gratifying of all washes.

PRICE: In 5-gallon jacket cans, 85c per gallon; in 1-gallon cans, \$1.00, f.o.b. Louisville, Kentucky. The usual Western price is 90c to \$1.00 per gallon, in 5-gallon cans, owing to increased freight.

USUAL DILUTION: For Green and Woolly Aphis and Black Peach Aphis, 1 gallon "Black Leaf" in 65 or 75 gallons water. For Thrips, 1 to 50 or 60.

TO SAVE YOU FREIGHT: Write us for name of agent nearest you.

**The Kentucky Tobacco Product Co., Inc., LOUISVILLE, KENTUCKY**

**Marlin**



**.25-20**  
**Model 1894**  
**Repeating Rifle**

This rifle is built for settled districts, where good range and killing power are desired, with safety to the neighborhood.

The **Marlin** .25-20 is a light, quick-handling, finely-balanced repeater, with the solid top, closed-in breech and side ejection features which make **Marlin** guns safe and agreeable to use and certain in action.

It is made to use the powerful new high velocity smokeless loads with jacketed bullets as well as the well-known black powder and low pressure smokeless cartridges, and is the ideal rifle for target work, for woodchucks, geese, hawks, foxes, etc., up to 300 yards.

**THE SIGN OF A**  
  
**Marlin**

**The Marlin Firearms Co.,**  
Willow Street, NEW HAVEN, CONN.

# Malthoid



# Roofing



A roofing guarantee is worth no more than the quality of the roofing.

If the roofing is not made to make good, the maker never will.

Buy Malthoid Roofing—lay it carefully—you'll never have occasion to request us to protect our guarantee.

Made by THE PARAFFINE PAINT COMPANY  
San Francisco and Everywhere

Stuart Hardware and Furniture Co., Agents, Hood River

**IT'S FREE**

Send for it.  
A new  
and valuable  
book on  
**Cheerful  
Homes**

This booklet is  
illustrated  
with pictures  
of the most  
beautiful  
bungalows  
of Southern  
California

## USE I H C BINDER TWINE FOR SURE-STEADY-ECONOMICAL RESULTS



**D**ON'T experiment with binder twine of low grade or unknown quality. Sisal or high-grade Manila, bearing the I H C trade-mark, should be your choice.

You can be sure that they will stand the necessary strain. They have the quality and quantity of fiber in them that insures strength to spare.

Even-spun, smooth-running, no knots, thereby avoiding tangles in the twine box and consequent waste. These qualities give even tension—which means perfect binding and perfect tying.

Inferior binder twine is dear at any price. It means not only waste of time and poor work, but a waste of the twine itself, possible loss of crop at harvest time; and it is not always full length to the pound. Every ball of I H C twine is

### Guaranteed to be Full Length

And every ball runs smooth and steady so you can use all of it.

Remember, we sell grain binders. Naturally, therefore, we are more interested in the quality of twine you use than the twine manufacturer who does not sell binders.

Stick to Sisal or Standard Sisal 500-ft. twine. If you prefer Manila, you will economize by getting high-grade Manila 600-ft. or Pure Manila 650-ft. Don't be fooled by a low price. Low-grade Manila costs as much as high-grade Sisal, but isn't worth as much. 85 to 90 per cent of the farmers know. 85 to 90 per cent use Sisal and Standard. In any case, look for the I H C trade-mark to be sure of quality. Choose from any of the following brands: **Champion, Deering, McCormick, Milwaukee, Osborne, Plano, International.**

Better let your local dealer know well ahead of time how much you will need. Meanwhile, if you want more interesting facts on binder twine, write nearest branch house for particulars.

**WESTERN BRANCH HOUSES:** Denver, Col.; Helena, Mont.; Portland, Ore.; Spokane, Wash.; Salt Lake City, Utah; San Francisco, Cal.

**INTERNATIONAL HARVESTER COMPANY OF AMERICA**  
Chicago (Incorporated) U. S. A.



**I-H-C LINE**

LOOK FOR THE I. H. C. TRADE MARK. IT IS A SEAL OF EXCELLENCE AND A GUARANTEE OF QUALITY

**DENVER  
LITHOGRAPHING  
C**

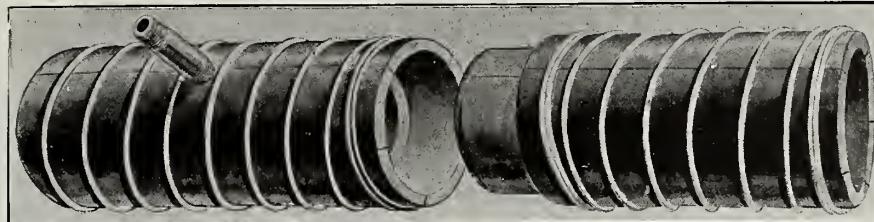
Denver, Colo.

**We Make  
High Grade  
LABELS**

**Samples & Prices  
for the Asking**



Estimates  
Furnished  
on  
Application



Special  
Attention Paid to  
Pipe for  
Irrigation  
Purposes

## PACIFIC COAST PIPE CO. BALLARD STATION, SEATTLE, WASH.

Manufacturers of Continuous Stave and Machine Wire Wound Water Pipe from 2 inches to 14 feet in diameter  
Over 100 miles of our pipe was furnished for irrigation during 1909

## Let us prove that a Binks Sprayer will make the most money for you

Send your name now, on a postal or in a letter, to get all the facts about Binks Sprayers. You'll find just the one that meets your needs best—at a price that's easy on your pocketbook. Don't buy any sprayer till you hear from us. Read our book to know what's best. Read what others say—try a Binks—then decide for yourself.

The "Binks" combined engine and pump is the lightest, simplest and most compact water-cooled spraying outfit on the market today. The only gasoline power sprayer having an entirely all-brass pump. Nothing to rust or corrode from the spraying chemicals; brass ball valves; all brass piping, and an eight-gallon steel air chamber. Nothing to get out of order—operates at 200 pounds pressure if required.

Our book illustrating many styles of sprayers will be sent upon request. Shows the sprayer for you.

### The Binks Spraying Machine Co.

1909 Fulton Street

CHICAGO, ILLINOIS

Buy and Try

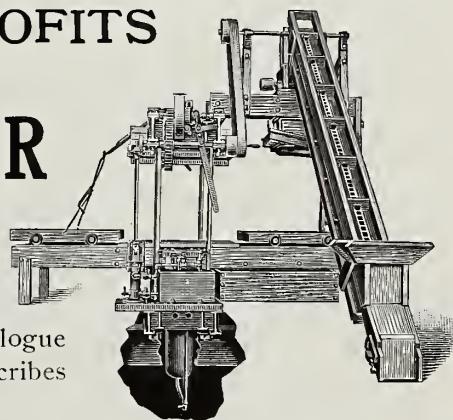
## WHITE RIVER FLOUR

MAKES

WHITER, LIGHTER BREAD

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

## BIG PROFITS IN CIDER



Write for Catalogue  
which fully describes  
and illustrates

## THE ORIGINAL MOUNT GILEAD HYDRAULIC *Cider and Wine Presses*

Capacity, 10 to 400 barrels per day  
Made in all sizes, hand or power

## FULLY GUARANTEED

Write for any information desired. We can show  
you how \$1,500.00 clean profit can be made.

## The Hydraulic Press Mfg. Co.

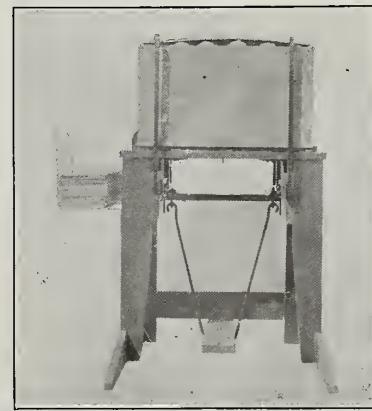
Largest Manufacturers of Cider Presses in the World  
60 Lincoln Avenue MOUNT GILEAD, OHIO

## W. L. Goyett

The lightest, fastest,  
most durable and easy  
to work automatic apple  
box press made. Will  
pay for itself in one season.  
The new machine  
has spring cleat holders.  
Shipping weight 35 lbs.  
Price, f.o.b. Canon City,  
cash with order, \$7.50.

### W. L. GOYETT

801 South Twelfth St.  
Canon City, Colorado.





## OLIVER'S SPECIAL ORCHARD PLOWS No. 7 V

Showing plow from rear, as if at work among trees, wheel inside of landside line. Hub of wheel does not project to strike trees. All levers down. Third base can easily be attached.

No. 17 Two or Three Furrow Gang



## Oliver Chilled Plow Works

Portland, Oregon

South Bend, Indiana

San Francisco

## ORCHARDIST SUPPLY HOUSE

FRANZ  
HARDWARE CO.

Hood River, Oregon

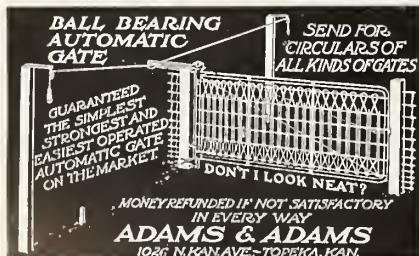
## Hemingway's ARSENATE OF LEAD

A Perfect Product  
Properly Packed  
Honestly Priced

*Guaranteed to meet  
the requirements of the various  
State Agricultural Authorities*

For Coast Prices and Supplies  
Address the Agents

**KERR, GIFFORD & CO.**  
Portland, Oregon



## Dependable Brand LIME-SULPHUR SOLUTION

Has been used by the leading fruit growers in the Willamette Valley and has worked wonders in eradicating San Jose scale, anthracnose and other pests which have infested our orchards.

Manufactured by the

**GIDEON STOLZ CO.**  
SALEM, OREGON

Write for our Spray Book and prices.

## SPRAY WITH THE OLD RELIABLE BRAND

## SWIFT'S ARSENATE OF LEAD

*Manufactured only by the*

MERRIMAC CHEMICAL CO., Boston, Massachusetts  
WOODARD-CLARKE CO., Portland, Oregon

## “ORWOOD” FRUIT SPRAY

A spray made entirely from wood oils and wood acids.

A spray that is a positive fungicide.

A spray that is positively fatal to all scale and aphids.

“Orwood” fruit spray is the most efficient winter spray for mosses, fungus, San Jose and other scale and all pests requiring winter spraying.

For summer spraying for fungus, scab, scale and all the forms of aphids, “Orwood” spray is unequalled. No fungus can germinate or live where it is used, and it is fatal to all the sap-sucking pests. It will not spot foliage or fruit.

For borers, paint the tree trunks with “Orwood” spray at its full strength.

Paint your poultry house with “Orwood” spray at its full strength and eradicate all insect pests.

If your dealer does not carry these articles write

## OREGON WOOD DISTILLING COMPANY

Works at Linnton, Oregon

418 Mohawk Building

PORLAND, OREGON

**"FRIEND" SPRAYER FACTORY TO ENLARGE.**

At a special meeting of the board of directors of the "Friend" Manufacturing Company, of Gasport, New York, on Tuesday, February 8, 1910, it was voted to double the efficiency of the present plant by the addition of a large fire-proof struc-

ture, to be used for the installation of the new and modern machinery which the company have recently purchased, and contemplate purchasing for another season's work. The residence property of Rev. George Hill, the general manager, adjoining the company's property on the east, was purchased for this new addition, and it was voted to proceed as rapidly as possible with the construc-

**Burpee's Seeds**

**Cost More than do usual commercial grades,—but (and this is a great big **BUT!**) they are worth much more than the difference in cost!**

**W. ATLEE BURPEE & CO., PHILADELPHIA**

**Prepared Spray Mixtures**

OUR Spray Mixtures are always ready for use by adding water. They are the best and cheapest—no dirt nor bother in mixing; no waste; thousands of pleased customers.

Catalogue describing fourteen different prepared Spray Mixtures, also Spray Pumps and Canning Outfits manufactured by us, and illustrations of various insects and pests, which are so destructive to fruit and vegetable crops, mailed free.

**QUINCY SPRAY MIXTURE CO., Box 221-B, Quincy, Ill.**

**I H C**  
**FAMOUS SPRAYING OUTFITS**  
**NET BIGGEST RETURNS**

**ECONOMICAL — THOROUGH — RAPID**

**S**PRAYING is absolutely essential. You must control plant diseases and insect pests to get the most from your field crops and fruit trees. There is no argument on that point. But get the right spraying outfit—to do the work right, at the least expense, in the shortest possible time, with the least work. One of the Famous spraying outfits meets your needs exactly—no matter what style or size you want. The outfits are complete—engine, pump and all accessories, mounted on skids or trucks. You can

**Use the Engine for Other Work**

An I H C spraying outfit is a year-round money-maker. You can easily detach your 1 or 2-horse-power engine and use it to operate any machine you have on the farm—grinder, washing machine, saw, separator, churn, pump, etc. You know the reputation of I H C engines for simplicity, economy, dependability. They are making big money for thousands of farmers, gardeners and fruit-growers everywhere—and the fact that you can use your I H C engine for any purpose beside spraying, makes it invaluable to you.

Don't tie your money up in an outfit that can be used only for spraying purposes. Investigate the I H C line. We furnish blue prints so you may build your own spray wagon, tank, etc. Our valuable spraying book will interest you immensely. Write our nearest branch house for a copy or get one from our local agent—with full particulars about the I H C line of Famous spraying outfits.

**WESTERN BRANCH HOUSES:** Denver, Col.; Helena, Mont.; Portland, Ore.; Spokane, Wash.; Salt Lake City, Utah; San Francisco, Cal.

**INTERNATIONAL HARVESTER COMPANY OF AMERICA**  
(Incorporated)

**Chicago U S A**



WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

tion of the building. The company reports that each year their business doubles each preceding year, and this proposed addition will greatly facilitate in filling orders promptly for the celebrated "Friend" Spraying Outfits, that are now being shipped into all parts of the world.

**LILLY'S  
BEST  
SPRAY  
BOOK**

MOST complete addition of its kind ever published on the Pacific Coast. Contains a Spray Calendar compiled by the State Experiment Station—Illustrations, Descriptions and Habits of Insects and Diseases peculiar to plants and fruits of the Pacific Coast—Spray Machinery, and how to use it—and a list of tested Sprays and Insecticides. It is A PRACTICAL GUIDE, and will be sent free to anyone interested.

The CHAS. H. LILLY CO., Seattle

**LION BRAND**

Is the stamp of purity, strength and uniformity in insecticides

We make more insecticides than any other manufacturer in the United States, and Blanchard's "LION BRAND" is the standard on four continents.

**BLANCHARD'S**

**LION BRAND BORDEAUX MIXTURE**  
Made by us for over twenty years, and guaranteed to contain nothing but the purest and most effective ingredients. One gallon to forty-nine of water.

**BLANCHARD'S**

**LION BRAND PARIS GREEN**  
We are the only independent makers of Paris Green. Lion Brand is sold in every state in the Union. There's a reason—Lion Brand is pure and strong, contains not a particle of filler or adulterant, nothing but purest Paris Green.

**BLANCHARD'S**

**LION BRAND ARSENATE OF LEAD**  
Unequaled by any, anywhere, at any price. The Lion Brand is backed for purity and strength by our manufacturing reputation of nearly a quarter of a century.

**LION BRAND**

Insecticides are on sale in every state. If you cannot get them handily, write directly to us and we will see that you do. Send for

**Blanchard's Spraying Booklet**

*It is free to any one who is interested and contains much invaluable information for the fruit grower and trucker.*

**The James A. Blanchard Co.**

631 Hudson Terminal Building  
New York City, New York

**PORLAND SEED CO.**  
Local Agents PORTLAND, OREGON

# CUSHMAN SPRAYING MACHINE

BUILT  
IN  
THREE  
SIZES



HIGH { QUALITY  
PRESSURE

As the orchardist takes pride in placing on the market the highest quality fruit, so we take pride in producing the highest quality sprayer.

Our ambition from the start has been, not simply to make a fairly good machine and sell lots of 'em; not one just a little better than some of them, but to build the *best of them all*.

Our first experimental machine (built in 1902 and still doing good service at 200 pounds pressure) says we started right. We've improved every year, and "THE CUSHMAN QUALITY SPRAYING MACHINE" is so far in the lead today that the others are tumbling over each other with imitating features. Note how some adopted our agitator system and bronze ball valves on their 1910 machines for the first time. They think these features will help the efficiency of their outfits, and they will; we've tried them for years. But we have many other features which will continue to be exclusive, for they are protected by patents. When you buy see that you get *quality*—the kind that will stay with you for years to come.

At the recent National Horticultural Congress held at Council Bluffs, Iowa, more awards were given on apples which had been sprayed with the Cushman machines than on all others combined.

**Cushman Power Sprayer Company**

CAPACITIES  
5, 10 AND 13  
GALLONS  
PER MINUTE

LINCOLN  
NEBRASKA

## A VERY INTERESTING STORY

To a man at all interested in automobiles, the most interesting story that has lately been told is the story of the Overland car.

Here is a car, selling as low as \$1,000, which is so simple, so automatic that it has practically captured the country.

Two years ago only a few sample cars had been built. But those cars sold others, and the others sold still more. This year the orders booked for the Overland call for \$24,000,000 worth of cars.

Thirty carloads of Overlands are shipped out every day, and 4,000 men are employed in the making. The four Overland factories have thirty acres of floor space. Yet, with all this capacity, it has never yet been possible to keep up with the calls for Overland cars.

The reason for this demand is apparent to anyone, it is said, as soon as he sees an Overland

A well referenced, scientific horticulturist desires a position. Address A. B., care "Better Fruit."

## Can Your Surplus Fruits and Vegetables Big Profits

Don't let your surplus fruits and vegetables go to waste. Can them, the same as a large canning factory. There's always a market for canned goods, and for a small investment you can buy a

**STAHL**

Canning Outfit

and build up a big, profitable business. All sizes; fully guaranteed. Write for catalogue.

F. S. STAHL MFG. CO.,  
Box 304-D, Quincy, Ill.

## To Destroy Aphis and Plant Lice Without Injury to Foliage, Use "BLACK LEAF" TOBACCO EXTRACT

### A FEW TESTIMONIALS FROM EXPERTS YOU PROBABLY KNOW

PROF. C. P. GILLETTE, of the Colorado Experiment Station: "We used 'Black Leaf' Extract to a considerable extent in our experiments in the vicinity of Grand Junction, Colorado, the past summer, and found it very satisfactory indeed, both for the destruction of woolly aphis and the green aphis of the apple tree. We also used it against the black peach aphis and the green peach aphis with equally good results. So far as I am able to learn, universal satisfaction was given wherever the decoction was used as strong as one part in seventy-five parts of water."

MR. LUTHER BURBANK, Santa Rosa, California: "I have found 'Black Leaf' Tobacco Extract convenient and satisfactory for destroying aphis and other insects."

PRICE: In 5-gallon jacket cans, 85 cents per gallon, f.o.b. Louisville, Kentucky, or in the Central states; the average Western price being 95 cents per gallon. In 1-gallon cans the price is \$1.00 each, f.o.b. Louisville, Kentucky, and at most points east of Omaha.

DILUTION: For spraying fruit trees, 1 gallon of "Black Leaf" is usually diluted with 70 gallons of water.

UNIFORM STRENGTH: Owing to the fact that "Black Leaf" is permitted by the United States Department of Agriculture to be used in official dipping of sheep and cattle, "Black Leaf" is marketed under a positive guarantee as to nicotine strength. This feature will doubtless be duly appreciated by fruit growers.

MANUFACTURED BY THE

**KENTUCKY TOBACCO PRODUCT CO.**

(INCORPORATED)

LOUISVILLE, KENTUCKY

car. The car is so simple that a ten-year-old child can master it in five minutes. A novice can drive it a thousand miles without any trouble whatever. It is almost trouble-proof.

One who wants some good reading should write to the Willys-Overland Company, Toledo, Ohio, for their book entitled, "The Wonderful Overland Story."

◆ ◆ ◆

**UNIFORM STRENGTH AND PURITY OF Insecticides.**—Every farmer, fruit grower and trucker is interested in the bill before Congress providing for the control of the purity of insecticides and fungicides, so far as they enter interstate commerce by the United States Department of Agriculture. The general scope and purpose of

## WONDER OIL LAMP **FREE**



This is a Genuine Wonder **INCANDESCENT 100-CANDLE POWER** Kerosene Oil Lamp in every way equal. Many times **BRIGHTER, CHEAPER** and **SAFER** than Gasoline, Electricity or ordinary lamps for lighting homes, offices, stores, halls and churches. We ask that you show it to your neighbors. If you accept the proposition we will send you, we will give you a lamp **FREE**. Send your name and name of nearest express office

**UNITED FACTORIES CO.**  
Largest Lamp House In America  
1072 FACTORY BLDG., KANSAS CITY, MO.

**SULFOCID**  
MAKES US SMILE

**A SUBSTITUTE**  
**For Bordeaux Mixture**

10-gal. keg making 1,500 gals. Spray; delivered at any R. R. station in the United States for \$12.50. Prompt shipments. Write to day for full information.

**B. G. PRATT CO.,** Manufacturing Chemists,  
50 CHURCH ST., NEW YORK CITY

The question of spraying with the up-to-date grower and orchardist is not why to spray, but rather what material to use to get the largest proportion of perfect fruit.

## **SHERWIN-WILLIAMS** **INSECTICIDES AND FUNGICIDES**

comprise a line of spraying compounds, the use of which will increase the percentage of perfect fruit in your crop many times over, affording your orchards protection from leaf-biting insects and fungus troubles. They are made of the very best materials, and are combined in exactly the correct chemical proportion to be effective killing agents without injury to the trees or foliage. Write for pamphlets on S-W Lime-Sulfur Solution, New Process Arsenate of Lead and Paris Green.

**THE SHERWIN-WILLIAMS CO.**  
MFGRS. HIGHEST GRADE INSECTICIDES AND FUNGICIDES  
707 CANAL ROAD 608 CLEVELAND, OHIO

# GRASSELLI ARSENATE OF LEAD DESTROYS ALL LEAF EATING INSECTS

*Extensively used in the Northwest  
Sticks to the foliage and will not burn*

### Distributors:

WENATCHEE PRODUCE COMPANY, WENATCHEE, WASHINGTON

E. O. KECK, NORTH YAKIMA, WASHINGTON

H. S. CHURCH, SPOKANE, WASHINGTON

HARDIE MANUFACTURING COMPANY, PORTLAND, OREGON

And in all other consuming districts

Write above or write our St. Paul office for name of nearest distributor. We have been making chemicals for over seventy-five years. Insist on Grasselli Brand and get the benefit of this long experience by increased value of crops

**THE**  
**GRASSELLI CHEMICAL COMPANY**  
ST. PAUL, MINNESOTA

this bill have been previously explained in these columns. The measure has the endorsement of all the leading national organizations representing the farmers, such as the National Grange, the National Apple Growers' Congress, the National Horticultural Congress, the American Pomological Society, the Association of Economic Entomologists, etc., and also has the hearty endorsement and support of practically all the manufacturers. The use of insecticides and fungicides has increased so rapidly in the last few years that the manufacturers realize that it is of the utmost importance that standards be adopted so that the use of the manufactured products may be on an equitable and scientific basis. It is often impossible for the reputable manufacturer to compete with one who is selling inferior goods at a slightly lower price. This sort of business is injurious both to the legitimate manufacturer and consumer.

The question has been raised whether this sort of control should not devolve upon the states, and whether it would not be an infringement of the powers of the states for Congress to enact such legislation. An increasingly large proportion of the insecticide and fungicide business, however, is direct from the manufacturer to the consumer, or to a co-operative association of buyers. This business, which is a very large pro-

portion of the whole, in which the manufacturer ships in original packages or cargoes direct to the consumer is strictly interstate and is beyond the police powers of the state. The control of such interstate commerce is entirely subject to national laws and administration.

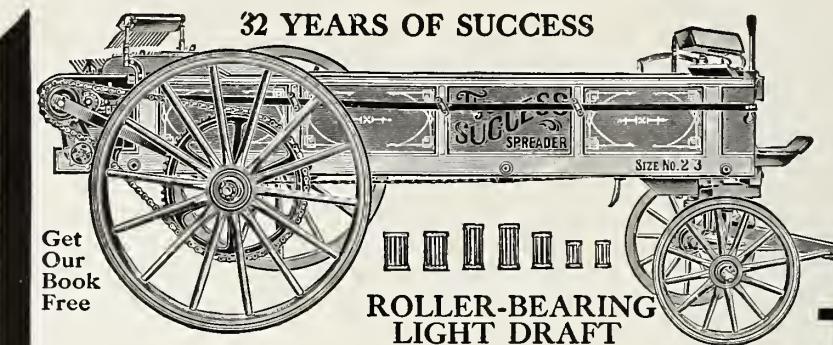
There is a very general appreciation of the need of such control due to many a low grade and

some evidently fraudulent insecticides and fungicides, so that no further argument for the passage of the measure would seem to be necessary. The measure is one of those many meritorious ones which come before Congress, whose passage will depend largely upon whether Congress feels that there is any real need or popular demand for it.

## FINE BABY CHICKS 8 CENTS EACH

Leghorns, Wyandottes, R. I. Reds, Minorcas, Langshans, Orpingtons, Plymouth Rocks, etc. All fine stock. Partly grown chicks, 30 cents each. Eggs for hatching, \$4.00 per 100. We guarantee safe arrival anywhere. Booklet free.

CULVER POULTRY FARM  
121 Broadway Benson, Nebraska, U. S. A.



**32 YEARS OF SUCCESS**

Get Our Book Free

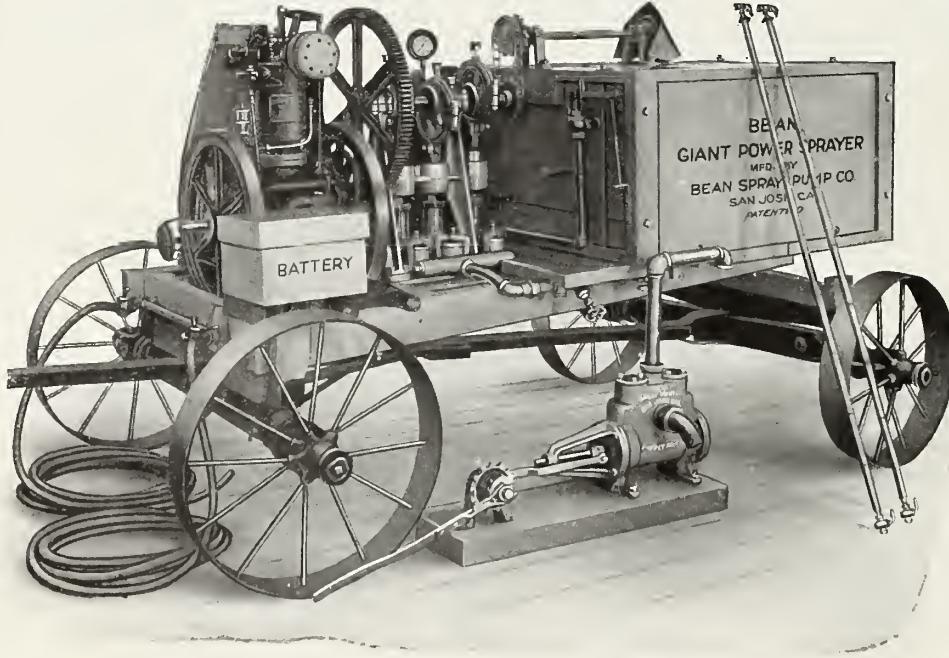
**ROLLER-BEARING LIGHT DRAFT**

**SUCCESS SPREADER**

The only spreader with a 32-year record of good work. Simplicity, Durability and Light Draft always foremost. Direct Chain Drive. No Cog Gears. The choice of men who investigate thoroughly. Wood or metal wheels. A generation of experience back of every Success. The leader from the first. Exclusive features all patented. Catalog of facts Free. Write us promptly.

**Kemp & Burpee Mfg. Co.** **SYRACUSE N.Y.**

# You Want a Bean Power Sprayer



### BEAN MAGIC HAND SPRAYERS

The only hand sprayers that enable the operator to maintain an effective pressure for any length of time. With a Bean Magic you can spray your trees at a pressure of 120 or 130 pounds, reaching every limb and effectually destroying all scale and fungus growth.

By our patent mechanism only two-thirds as much labor is required to operate a Bean Magic Pump as is required to operate any ordinary pump at the same pressure. Send for Catalog 24.

If you want a power sprayer at all.

You want a Bean because it is the most practical, economical, serviceable power sprayer on the market. It's built for business; thoroughly accurate in all its parts; strong, durable, and guaranteed to back up every claim that we make.

Made with Bean patent bell-metal ball valves; porcelainized cylinders that cannot corrode or rust; perfect engine-cooling devices; and other features that you'll find in no other sprayer.

The Bean Power Sprayer is compact, low down, light, and offered in varying capacities. It can be used in any orchard, large or small, hilly or level.

And all parts are easily accessible and may be replaced without trouble. It doesn't take a machinist to operate a Bean.

**SEND FOR OUR FREE CATALOG 22.** It tells all about Bean Power Sprayers: how they are made; what they are made of; what they can do; why they are made as they are, and, in fact, everything you want to know—and ought to know—before you buy. Just drop us a postal or cut this corner from the ad and send it to us with your name and address.

# Bean Spray Pump Co.

**"EVERYTHING FOR SPRAYING"**

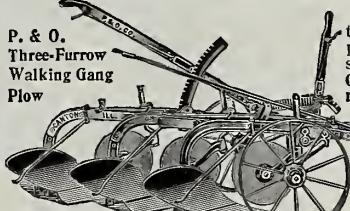
213 W. Julian St., San Jose, California

Cleveland, Ohio

# P & O

## Walking Gang Plows

P. & O.  
Three-Furrow  
Walking Gang  
Plow

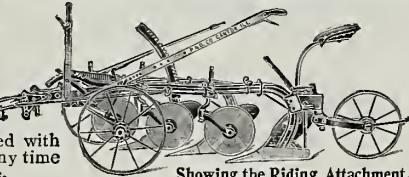


Made with Two or  
Three Bottoms. A Third  
Plow Attachment can be added to the  
Two Furrow Plow. The Three Furrow  
Plow can be cut down in size by remov-  
ing the outside beam and bottom.

A Riding Attachment can be purchased with  
the plow, or at any time  
in the future. It is made to fit either size.

Insist on getting P. & O. implements from your dealer. They are Backed by an Un-  
qualified Guarantee. A Beautifully Illustrated Pamphlet, and a P. & O. Catalog, will be  
mailed Free. Write for Catalog No. Q 155

PARLIN & ORENDORFF CO., CANTON, ILLINOIS



Showing the Riding Attachment.

The School of Size is Good  
" " " Quality " Better  
" " " Having Both " Best } *Investigation will  
prove we have both*

"Business Training in Business Methods by Business Experts"

# Behnke Walker

The Leading Business College  
Portland, Oregon

## VEHICLES AND AGRICULTURAL IMPLEMENT

THE BEST OF  
ORCHARD AND GARDEN TOOLS  
A SPECIALTY

GILBERT - VAUGHAN  
IMPLEMENT CO.  
HOOD RIVER, OREGON

D. McDONALD  
Hood River, Oregon  
Headquarters for  
FARMING AND ORCHARD  
TOOLS

Disc Harrow Extension for  
Orchard Cultivation a Specialty

When you want any kind of Orchard  
Tools come to me and get the Best

# Better Farming

A John Deere Book

—Just Out

A Farmer Can  
Get It Free

If interested in farming, get our FREE  
book called "BETTER FARMING."  
It tells all about—

Alfalfa	Making Hay
Dairying	Fighting Frost
Seed Wheat	Silos
Corn Crops	Cultivation
Stock Feeding	Cotton Crops
Art of Plowing	Soil Fertility
Boll Weevil	Gasoline Engines
Controlling Weeds	Adjusting Plows

## Hired Help Costs Big Money

Your land is high priced and hired help expensive. There is only one way to make big money—use implements that cut down the cost of your crops. Isn't it true that when you break something on a plow it is nearly always a cast part? Wherever strain comes on a John Deere Plow there you will find steel—tool steel. Take any plow that has had hard work for five years, put it along side of a John Deere which has been in service that long—and see the difference. Then there is no paint to cover up poor material. You can see the wear and the defects. The John Deere will be solid, staunch and ready for the hardest job. Then you begin to know that quality counts.

You can take pride in owning a John Deere—the standard plow of the world for two generations.



We will send you the 80-page, illustrated book free if you write and ask for

### Package No. 46

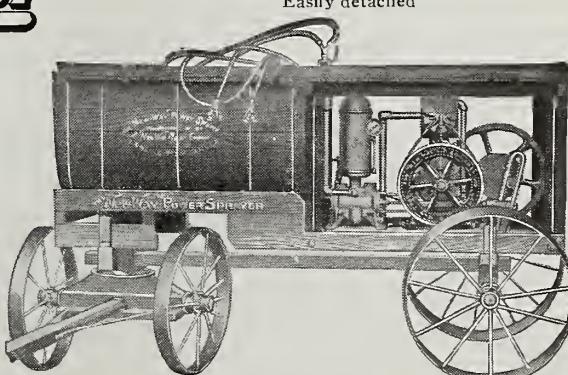
Mention the package number *sure*, then  
you will get exactly the right stuff.

DEERE & COMPANY, MOLINE, ILL.



# The "New-Way" POWER SPRAYER

Always ready for any work in any climate  
Easily detached



## "NEW WAY" AIR COOLED ENGINE

Gasoline, Distillate or Alcohol Fuel

Carries high pressure without the usual vibration or strain, and is the most practical, durable and economical machine ever built for spraying. Use your own running gear if you prefer. Write us today for Spray Catalogue No. S-8

John Deere Plow Co.

Portland, Oregon

GILBERT & VAUGHAN

Local Agents Hood River, Oregon

Fruits of High  
Quality  
Follow this  
Quality  
Sprayer





## These are the Spray Pumps that Help Me Grow Big Apples

Go wherever you will, through any large fruit district—Western, Central or Eastern States—you will find satisfied users of Deming Spray Pumps. Keen, hard-headed, wide-awake growers, men who produce fruit for profit, and *make it pay*, choose

### DEMING SPRAY PUMPS

Because of their constant, year-after-year records of good service; because they stand the wear-and-tear strain of every-day orchard work, and because, when needed most, they can be depended on.

Some of the more than twenty styles offered this year were made especially for the West; all are of the same high quality—wear-resisting and efficient in high degree. More than twenty styles, hand and power. Deming outfits have been used with success in all the large fruit growing districts for many years. If you want to know more about them, we invite you to call at our nearest store and examine them for yourself, or we'll gladly refer you to persons in your own locality using them.

Our 1910 Spray Book will interest you. It's free—write.

CRANE CO., PACIFIC COAST AGENTS  
Portland, Seattle, Spokane, Tacoma, San Francisco

THE DEMING COMPANY  
743 DEPOT STREET, SALEM, OHIO

Manufacturers of Spray Pumps and Nozzles, Power Pumps for Irrigation and Water Supply, Hydraulic Rams, Hand and Windmill Pumps, Etc.

HEADQUARTERS FOR  
**CENTURY**  
SPRAY PUMPS

Hose, Nozzles, First-class Plumbing Supplies

**C. F. SUMNER**

Successor to Norton & Smith

HOOD RIVER, OREGON

### THE WATERLOO GASOLINE ENGINE *Is the Steady Service Engine*

Eliminates usual gasoline engine troubles. Write for complete descriptive catalogue, which explains in detail the many superior features.

2-horsepower - - \$ 90.00

4-horsepower - - 160.00

f. o. b. Portland, Oregon

*Write us about your machinery and pump requirements*

Pipe Pumps Windmills

Gasoline Engines Launches

Well Drilling Outfits

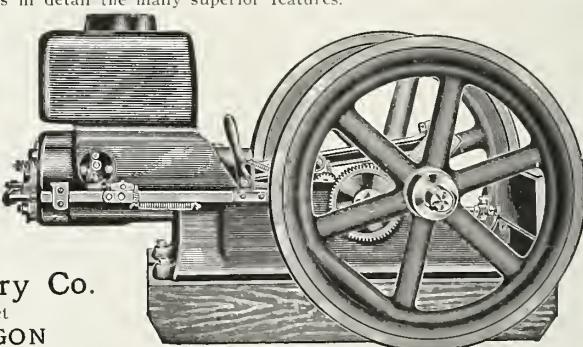
Hydraulic Rams Fittings Belting

Saw Mill Machinery

**Reierson Machinery Co.**

182-4-6 Morrison Street

PORTLAND, OREGON

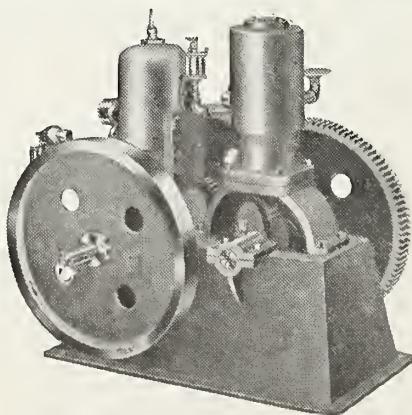


### EAGLE BRAND ARSENATE OF LEAD

Produces better results than other brands, because—it is made so as to possess the greatest strength and insecticidal properties; remains a long time in suspension with water, affording a uniform spraying mixture; adheres to the foliage, and does not scorch even when heavily applied. Highly recommended by agricultural experiment stations.

**CHAS. H. LILLY CO.**

Western Distributors SEATTLE, WASH.



### MARVIN'S GASOLINE AIR COMPRESSOR **SPRAYER**

To be used in connection with steel tank instead of gas. Cost of operation about fifty cents per day for gasoline and oil. Gasoline engine and air compressor on same base; weight only about 350 pounds

CATALOG ON APPLICATION

E. P. Marvin, Jr. Lockport, N. Y.

**Medford Spray Co.**  
MEDFORD

**Oregon Spray Co.**  
PORTLAND

**Hood River Spray Mfg. Co.**  
HOOD RIVER

*These Factories Make and Distribute the Famous*

# **NIAGARA** **Lime-Sulphur Spray**

The leading fruit growers and fruit growers' associations of the Northwest use NIAGARA exclusively

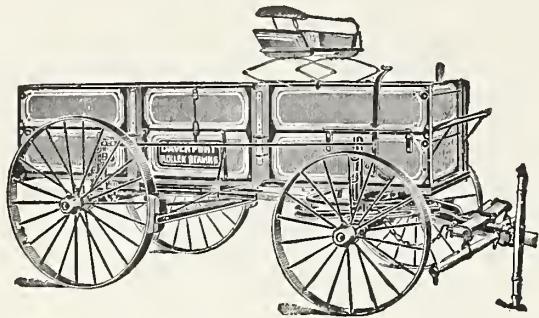
## ***There is a Reason Why***

NIAGARA is made under special process originated by ourselves. The only known process by which is made a permanent, clear and reliable solution of lime and sulphur of sufficient strength to meet all requirements

Write for Further Information

***Wherever Fruit Excels NIAGARA SPRAY is Used***

# DO YOU KNOW A WAGON BARGAIN WHEN YOU SEE IT?



You can pay a certain price and get an old style wooden wagon that you and your neighbors have always used.

That will satisfy you as long as you don't know anything better. But, you can pay just about the same price, possibly a little more, and

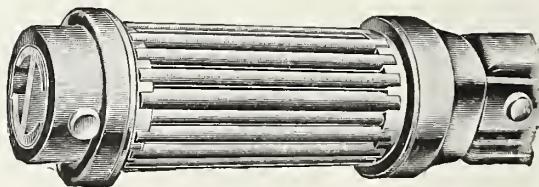
## See What You Get for Your Money

Buy this Davenport Wagon and you get a wagon that is practically all steel—a wagon that has double the strength and double the life of your wooden wagon. There are no break-downs, nothing to rot, dry apart or work loose. First cost is the only cost. There are no repair bills. You get the automobile hub with its perfectly protected steel roller bearings. Unlike your wooden wagon, it is impossible for sand, dust, mud or water to enter the bearings. You have the straight instead of the tapering spindle. You oil all four wheels in one half minute. You do it without removing wheels. You get the wagon that is all convenience. You get easy running. You save your horses. Two horses pull as much as three with old style wagons.

### THIS ROLLER BEARING MAKES 30 TO 50 PER CENT LIGHTER DRAFT

Which is the better wagon bargain for you? Would you rather have the old style wooden wagon?

Or would you rather pay the same price and get the long-lived, easy-running Davenport Roller Bearing Steel Wagon? Write for Catalog V to give you particulars.



DAVENPORT WAGON CO.

Davenport, Iowa

REX!

REX!

REX!

## Rex Lime and Sulphur Solution

Get the best, nothing but the best, and you will always have the best results.

REX stands unquestioned as being the **best** Lime and Sulphur Solution on the market today, and is the **standard** which all other manufacturers try to imitate.

REX is a 33° Baume solution. Professor R. W. Thatcher, director of Pullman Experiment Station, will tell you that REX, when diluted 1 to 16, is equal to the 1-1-5 Piper formula which the Experiment Station Spray Bulletin recommends the grower to use when cooking his own material.

Mr. Fruit Grower, you have only to use REX Lime and Sulphur Solution once to use it always. All **experts** will tell you what REX will do; those who don't know—their say-so isn't worth having.

We Manufacture and Sell it

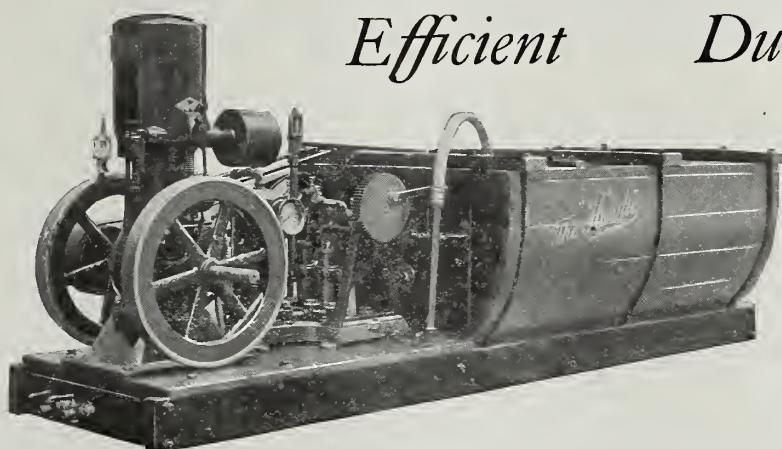
WENATCHEE REX SPRAY COMPANY  
Wenatchee, Washington

YAKIMA REX SPRAY COMPANY  
North Yakima, Washington

Write for prices and information.

# The Hardie Triplex Sprayer

*Efficient      Durable      Simple*



NOTHING  
TO WATCH  
BUT THE  
SPRAY

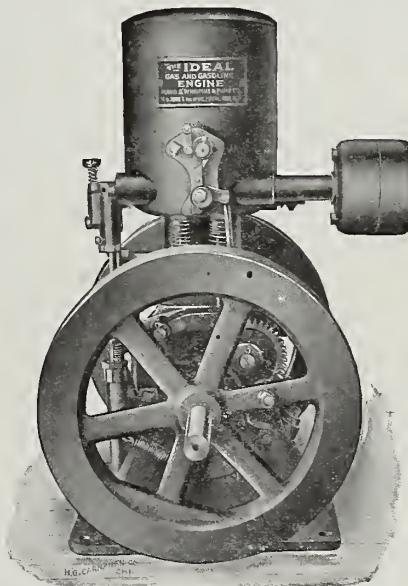
OUR 1910 model Triplex will suit you; will suit you in efficiency, in simplicity, in pressure, in capacity and in general makeup. Our TRIPLEX PUMP gives you an even continuous pressure, be it high or low, as desired. Our Rotary Agitator gives thorough agitation and our Ideal Engine sufficient power.

*On all Hardie Power Sprayers we use Our*

## IDEAL ENGINE

WE use this engine as it is compactly built, has no extra water or gasoline tank and is built for hard continuous service. The cooling system is the most practical of any.

No Tank   No Fan   No Freezing



Our complete catalogue giving prices of twenty different styles of hand and power sprayers, engines, nozzles, etc., is yours for the asking

**The Hardie Mfg. Co.**

Hudson, Michigan

22 Front Street, Portland, Oregon

# Increase Your Profits!

By Using **FANCY LABELS** on Your Fruit

WE MAKE ALL KINDS OF LABELS, FOLDING BOXES,  
STATIONERY ETC. FOR THE FRUIT GROWER,  
SHIPPER AND CANNER.

*Write us for Samples and Prices*  
**Schmidt Lithograph Co.**

408 WELLS FARGO BLDG.

PORTLAND, OREGON.

## THE KIMBALL

*Is the Best  
Orchard Cultivator  
On Earth*

IS THE TESTIMONY OF:  
E. H. Shepard, Editor "Better Fruit,"  
Hood River, Oregon  
A. P. Bateham, Manager East Hood  
River Fruit Co., Mosier, Oregon  
Dr. G. E. Sanders, Owner Roseland  
Orchards, The Dalles, Oregon  
And Thousands of Others



SEND FOR ILLUSTRATED DESCRIPTIVE CIRCULAR

**Johnston & Weber**

SOLE DISTRIBUTORS

THE DALLES, OREGON

Irrigation  
Farmers Can  
Grub Brush,  
Level Land,  
Cut Laterals

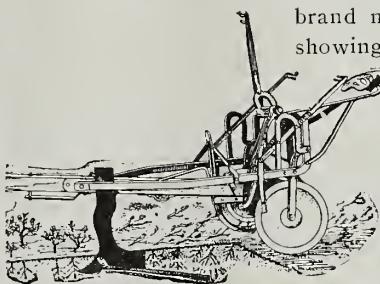


Throw borders, clean laterals, make shallow ditches, grade roads—do a score of dirt-moving operations cheaply, easily, quickly—all with the many-purpose

## 20th Century Grader

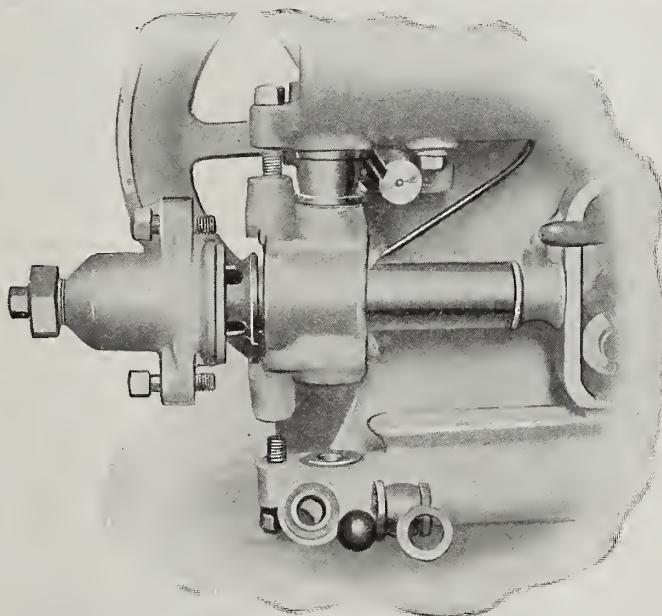
Grub sagebrush, four acres a day, at \$1.25 to \$1.50 an acre. Cut laterals, \$1.25 to \$1.50 a mile. Slope land, level it, fill in hollows, pare off hummocks at one-third usual expense. BE SURE to send right off for our free,

brand new "picture" catalogue, showing thirty-three photos, many large, with machine working in soil. You'll get ideas from it worth cash to you, even though you don't buy now. A postal will do.



The Baker Manufacturing Company  
742 Fisher Building CHICAGO, ILLINOIS

## HERE IT IS! THE FRUITGROWER'S FRIEND



### DEASSEMBLED PUMP CYLINDER AND VALVE

*This illustration shows the new and novel plan of construction of the IMPROVED "FRIEND" POWER SPRAYER*

Note the quick detachable valves and valve seats; quick removable and adjustable packing. No pipes or plumbing.

*Read our ad. in the January issue.*

Write us for description of our CALIFORNIA Model, the great \$350.00 Sprayer. We make them all sizes and capacities. Write us explicitly relative to your requirements. We have the GOODS. It's now up to you.

**FRIEND MFG. CO.**

Niagara Co. Gasport, New York  
Manufacturers of the world's best Hand and Power Spraying Outfits, and the celebrated "FRIEND" Nozzles, angle and regular.

# COLONIST RATES

TO

# OREGON

AND THE

# GREAT NORTHWEST

The management of the Oregon Railroad & Navigation Company takes great pleasure in announcing that the low rates from Eastern cities, which have done so much in past seasons to stimulate travel to and settlement in Oregon, will prevail again this spring DAILY from March 1 to April 15, inclusive.

## People of Oregon

The railroads have done their part; now it's up to you. The colonist rate is the greatest of all home-builders. Do all you can to let Eastern people know about it, and encourage them to come here, where land is cheap and home-building easy and attractive.

## Fares Can Be Prepaid

At home if desired. Any agent of the road named is authorized to receive the required deposit and telegraph ticket to any point in the East.

## Remember the Rates

From Chicago, \$33; from St. Louis, \$32; from Omaha and Kansas City, \$25. This reduction is proportionate from all other cities.

**WM. McMURRAY**

General Passenger Agent

Portland, Oregon



# THE IRRIGATED GARDEN SPOTS

Of the Northwest, along the Northern Pacific Railway, not only make ideal homes, but embrace land that is productive to an astonishing degree. The small, irrigated farm is most easily worked—the tiller of the soil is sure of his crops. His land needs only the water to make it

produce bountifully—and the water is there at his command. He farms scientifically, economically and with no waste of effort. The irrigated lands in Montana, Idaho, Washington and Oregon are cheap when you figure their productive capacity. Farm units under United States Government irrigation projects may be secured on easy terms and deferred payments. The climate in the Northwest is a great inducement. People are constantly buying land there. Don't delay too long. Write tonight for information about the section that interests you and about the home-getting opportunities along

THE NORTHERN PACIFIC  
EXTENDS THROUGH OR  
INTO MINNESOTA, WIS-  
CONSIN, NORTH DAKOTA,  
MONTANA, IDAHO, WASH-  
INGTON, OREGON. NEW,  
RICH TERRITORY BEING  
OPENED UP BY EXTE-  
NSIONS NOW BUILDING.  
THE HOMESEEKER'S  
CHANCE!

The Scenic Highway Through the Land of Fortune

## Northern Pacific Railway

L. J. Bricker, General Immigration Agent, St. Paul, Minnesota

A. M. CLELAND, General Passenger Agent, St. Paul

A. D. CHARLTON, Assistant General Passenger Agent, Portland



THE  
Principal Horticultural and  
Agricultural Sections

OF

Colorado, Utah and  
New Mexico

ARE LOCATED ON THE

*Denver & Rio Grande  
Railroad*

"SCENIC LINE OF THE WORLD"

Total output of fruit and vegetables from Rio Grande  
territory in Colorado, Utah and New Mexico during  
1909 was approximately 11,500 carloads

Special Homeseekers' and Settlers' rates to agricultural points from Denver  
Colorado Springs and Pueblo. *Write for literature, information, etc.*

S. K. HOOPER, G. P. & T. A.  
DENVER, COLORADO

# Washtucna Valley

## Irrigated Apple Lands

*Eighty Miles Southwest of Spokane*

### Here is What We Offer to You

The best undeveloped high grade apple land in the Northwest. That means something to you, doesn't it?

Here is what it takes to make the ideal irrigated apple land, and we have it. All that is needed is some ambition, and we will depend on you for that.

Soil—Pure volcanic ash, and plenty of it.

Water—All the water that you will absolutely need, and the drinking water is pure on account of the

Drainage—Which is perfect. No chance of alkali or of souring the soil.

Altitude—Average of 1,000 feet, which means apples of the best color and quality.

Transportation—Three through railroads leading to the best markets in the land.

Washtucna Valley is only eighty miles southwest of Spokane.

Fruit Growers' Union has been organized. Now is the time to get in.

**ARE YOU GOING TO MISS IT?**

#### **ONLY 4,000 ACRES**

Of this productive soil is available under our gravity system of irrigation. That means big prices soon.

#### **\$250 PER ACRE**

Including the perpetual water rights, will get you a five, ten or twenty-acre tract now.

#### **OUR WATER RIGHTS ARE ABSOLUTELY VESTED IN US**

The water is taken from the Palouse River, and we have Rock Lake (ten miles long and a mile wide) for a reservoir. The dams, headgates and canals are built and the water is there. No "speculation" nor "chance." The project is a success and you can yet get in on the ground floor prices. Later you will have to pay fancy prices.

A ten-acre tract will make you money. You can make a good living and your yearly payments by growing truck between the rows of young trees.

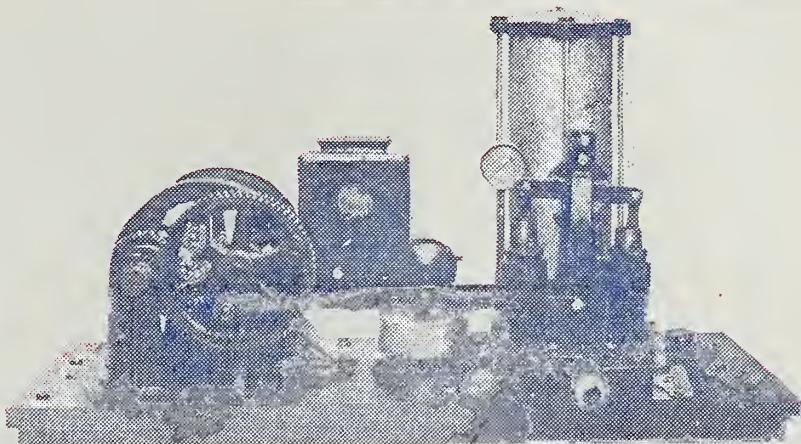
Write us for further information at once and arrange to see the valley and buy a tract before prices advance beyond your reach.

## Palouse Irrigation & Power Co.

412 First Avenue

*SPOKANE, WASHINGTON*

# THIS IS IT—



## *The Stover High Pressure Spray Outfit*

SIMPLEST, MOST EFFICIENT SPRAYER EVER PLACED ON THE MARKET

One Horse Power Stover "Hopper Cooled" Gasoline Engine. Light, strong and economical.

Mitchell Double Vertical Cylinder Spray Pump.

Easily the best pump we have ever sold. Large

air chamber. Mounted on a strong base. This outfit is compact, easily handled and is needed by every fruit grower.



PORLAND, OREGON

Spokane, Washington

Boise, Idaho

Don't fail to get our prices on this machine

## TO DIRECTORS AND MANAGERS OF SHIPPING ASSOCIATIONS

IT'S TIME TO CONSIDER how you are going to market the coming season's crop.

YOU WORK HARD to raise it and to prepare it for market, and it's up to you to get every net dollar for it you can.

THERE ARE SEVERAL SYSTEMS; each has certain advantages and disadvantages. Even that of selling for spot cash before shipment, however, is not always the best way—that is, does not always get you the most money. That's what you want, is it not?

SURE IT IS. Now, we cannot tell you what you ought to know about this subject in this limited space, but it will cost you only a two-cent stamp and a minute's time to write us (on Association stationery if you can) for our pamphlet—

### “SHIPPERS’ PROBLEMS HOW TO MARKET”

We are not unknown in any shipping district in the United States, and can satisfy you as to the success of our system.

PRODUCE REPORTER CO.

34 SOUTH CLARK STREET

CHICAGO

## BETTER FRUIT



PRODUCT OF ONE TREE POLLINATED BY BEES

The Owner Advises that His Crop of Apples Was Largely Increased Since He Began to Keep Bees

## Fruit Trees Demand Bees

Quantity of yield is greatly increased; color, flavor and shape improved, in orchards pollinated by bees. Recent experiments have abundantly demonstrated this.

The wind cannot be relied upon to distribute the pollen from tree to tree. This is the secret of reduced crops when other conditions are favorable.

The honey bee is your most valuable agent.

Keep bees if you would have the biggest yield and the finest fruit.

As is stated by the Oregon Agricultural College in its bulletin of Pollination, "As the assurance of a crop depends upon insects as distributors of the pollen, it is necessary that apiaries be established—with favorable climatic conditions and proper planting of varieties, the bees would insure pollination."

Write us for any special information you may require. The knowledge and experience of the bee experts in our employ is at your service. We can deliver Pure Bred Bees hived up ready to work, and furnish you with the necessary information for their proper care. Our complete Bee Supply Catalog No. 203 will be ready March 1 and will be sent to you on request.

We are Western Agents for the A. I. Root Company, largest manufacturers of bee supplies in the world, and whose products are the recognized standard of excellence among beekeepers. We carry immense stocks and can equip you with everything necessary for the profitable and successful handling of bees.

## PORTLAND SEED CO.

PORTLAND, OREGON

### GOULD SPRAY PUMPS

By their mechanical perfection Gould Spray Pumps have attained first place among fruit growers. Quality is apparent in every part and accessory. Their use makes thorough spraying easy. You are sure of the high pressure so necessary for good work. We will gladly advise you as to the proper outfit for your requirements. This information may save you much unnecessary expense and costs you nothing. Write us and ask for our Spray Catalog No. 204.

WE SELL SCALECIDE—the best spray for Pacific Northwest fruit trees. It kills San Jose scale, all soft-bodied insects and fungus. Write for free sample.

OUR COMPLETE ANNUAL JUST OUT—A complete illustrated compendium of information, prices and cultural directions. "Diamond Quality" seeds, poultry supplies, bee supplies, horticultural supplies, fertilizers, sprays, insecticides, garden implements, stock foods, remedies; 121 pages, with illustrations of over 375 articles and descriptions of over 1,990 items. Write for it. Ask for No. 200.

### POTASH AND OTHER FERTILIZERS

We ship in carload lots or less on short notice. Largest stock in the Northwest.

To put color on fruit and make it a long keeper, use certain fertilizers with certain soils. Our twenty years' experience qualifies us to advise you just what to use. This experience means dollars for the fruit grower. Write for free information.

Write for our Fertilizer Catalog No. 205.

WRITE FOR OUR CATALOGS

WRITE FOR OUR CATALOGS

